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ANNUAL REPORT

—OF THE—

State Board of Health

—OF—

MARYLAND

—FOR THE—

YEAR ENDING DECEMBER 31, 1903.



BALTIMORE

WM. J. C. DULANY CO., STATE PRINTERS

1903

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1904

State Board of Health of Maryland, 1903.

DR. WM. H. WELCH, President BALTIMORE.

DR. HOWARD BRATTON ELKTON.

DR. E. J. DIRICKSON BERLIN.

DR. JAMES BOSLEY, Health Commissioner of Baltimore City (Ex-officio).

MR. J. B. NOEL WYATT BALTIMORE.

HON. ISIDOR RAYNER, Attorney-General of Maryland (Ex-officio).

DR. JOHN S. FULTON, Secretary BALTIMORE.

DR. MORRIS C. ROBINS, Medical Assistant BALTIMORE.

DR. WM. R. STOKES, Bacteriologist BALTIMORE.

DR. W. B. D. PENNIMAN, Chemist BALTIMORE.

MR. CHARLES N. MITTEN, Inspector BALTIMORE.

M. L. RULLMAN, Clerk BALTIMORE.

DR. C. W. G. ROHRER, Laboratory Assistant BALTIMORE.

WILLIAM H. LUCAS, Vital Statistics Clerk BALTIMORE.

LETTER OF TRANSMITTAL.

OFFICE OF THE STATE BOARD OF HEALTH.

BALTIMORE, AUGUST 1, 1904.

To His Excellency

the Hon. Edwin Warfield,

Governor of Maryland:

I have the honor to transmit herewith the annual report of the State Board of Health for the year 1903. The reports of the local boards of health will be missed from this report, all of them having been lost in the fire of February 7. The report on vital statistics includes all the more important data, but the analysis of the records is not so complete as is desirable, and the diagrams which illustrate the meaning of the cold figures are omitted. After the fire of February 7 we found ourselves under the necessity of reconstructing the tables for both the years 1902 and 1903. This is laborious work and very painstaking. Our other routine duties have been in the meantime no lighter than usual, so that we have felt obliged to send the 1903 statistics to press less completely analyzed than those of former years.

I have to record the death of Dr. John Morris, of Baltimore, for more than a quarter of a century a faithful member of the State Board of Health. No man in Maryland was so familiar with the history of public hygiene in America, and especially in the State of Maryland. Until the last year of his life Dr. Morris was unremitting in attention to his duties as a member of the Board, and his interest in the sanitary affairs of the State was unflagging. His death occurred in the City Hospital, in Baltimore, on January 29, 1903.

The then Governor of Maryland, His Excellency John Walter Smith, appointed Dr. Edwin J. Dirickson, of Worcester County, to fill out the unexpired term of Dr. Morris.

The monthly meetings of the Board during the year have been faithfully attended, and all the business of the Board has been attended to promptly.

Yours most respectfully,

JOHN S. FULTON,

Secretary.

REPORT OF THE SECRETARY.

The great fire of February 7, 1903, destroyed the office of the State Board of Health in the Maryland Life Insurance Building, at 10 South street, Baltimore. The fire occurred on Sunday, and few of those having possessions in the path of the conflagration were warned in time to effect much salvage. The Secretary of the Board had an urgent official call to Caroline County on that date, and, intending to leave by an early boat on Monday morning, went down-town on Sunday evening for the purpose of spending the night on the steamer. But for this circumstance all the valuable records in the office of the State Board of Health would have been lost, for no warning had been given that the fire would spread as far as South street. The projected trip of the Secretary was postponed. The office of the Board was on the fourth floor of the building, and the elevator was idle. It was after eight o'clock, and the prospects were that not more than two hours remained for removing the State's property. A messenger was dispatched to notify the members of the office force and to hire a team. It was necessary to make a choice as to what should be saved. The records of births and deaths and the laboratory records seemed most valuable, and all of these were saved from the fire, though the records of six counties for the month of March, 1903, were lost from the wagon in transit from the scene of the fire.

The more valuable books were removed and many valuable loose papers. The records of the Tuberculosis Commission were all in the offices of the State Board of Health, and nearly all of them were saved. The Medical Officer of the Commission, Dr. Marshall L. Price, was confined to his bed by illness.

The fireproof safe was, of course, locked, and its combination known only to Mr. Charles Mitten, who was out of town

and did not arrive on the scene until ten o'clock. It is little to be regretted, however, that the safe could not be opened, for it was very full. No furniture was saved.

The whole edition of the Report of the State Board of Health for 1901 was in the office ready for transmission to the Legislature. This was lost. The Report for 1902 was completed and ready for binding at the printing house of King Brothers, 123 East Baltimore street. This, too, was lost.

The Secretary's monthly reports for the last half of the year 1903 were in the stenographer's desk with all the reports of the local health officers. All of these were lost.

Two weeks after the fire the contents of the safe were found in excellent condition. Letters received were all lost in the filing cabinet.

Under such circumstances it is beyond the power of the State Board of Health to make a detailed and circumstantial report of its year's operations. The vital statistics for two years past have to be laboriously reconstructed from the original records. This is a time-consuming work, and we shall do no more than summarize the results.

The operations of the Board in 1902 and 1903 were of great interest, and it is greatly to be regretted that their history must be so roughly sketched. In 1902 the State Board of Health prepared and presented to the Legislature a bill providing for the creation of a Tuberculosis Commission. This project had the hearty support of His Excellency John Walter Smith, the Governor of Maryland. This bill became a law, and Governor Smith appointed as the Tuberculosis Commission the following persons: Dr. William S. Thayer, of Baltimore; Mr. John M. Glenn, of Baltimore; Dr. Lillian Welsh, of Baltimore; Dr. W. Frank Hines, of Chestertown; Mr. George Stewart Brown, of Baltimore.

The Commission organized, and in the autumn of 1902 appointed Dr. Marshall L. Price, of Towson, as Medical Officer to devote the whole of his time to the work of the Commission.

The preliminary report of the Tuberculosis Commission, ready for distribution, was destroyed by the fire. Fortunately, however, the valuable records of the Commission were saved, and a more extended report now in course of

preparation will fully acquaint your Excellency with the results of their most painstaking investigations.

The State Board of Health mentions the origin and progress of the Tuberculosis Commission in this place because it considers the creation of this Commission one of the most important events in the history of public hygiene in Maryland, and looks upon the work already accomplished by this Commission as best of the sort so far done in America. The most conclusive evidence of its value was furnished by the Tuberculosis Exposition, organized and presented by the Commission in Baltimore, in the early part of the present year (January, 1904). The interest excited by the Exposition among the people of Maryland was very remarkable, but not more so than the large attendance which it attracted from various parts of the United States and Canada.

Vital Statistics.

The law on the subject requires the Secretary of the State Board of Health to report in January of each year concerning the births and deaths of the year next preceding. It is physically impossible to comply with this requirement as to the time of publication. The law provides that the returns of local registrars shall be made to the State Board of Health between the fifth and tenth of each month. One-third of the month of January has, therefore, passed before the records for December begin to arrive. The filing and tabulation of these records is quite laborious, and by no means to be hurried. Unless other work is, for the time, suspended, it is not possible to complete a good analysis of the records within the first four months of the year.

For the registration of deaths, it may be said that this work continues to improve. Certain counties continue to neglect these records, the worst offenders being, as heretofore, the counties of St. Mary's and Garrett. But for St. Mary's and Garrett counties, the State of Maryland would now be admitted to the group of Registration States of the American Union. This is not, however, likely to be a moving consideration to either Garrett or St. Mary's.

The returns for some other counties lack completeness and promptness. Somerset and Montgomery are in this class.

Official indolence and indifference are responsible for the defects in these counties. The towns, as a rule, make very complete and prompt returns. There is one exception, Laurel, in Prince George's County. The sanitary government of Laurel has been in all respects extremely poor for several years past, so that neglect to count up and report the births and deaths is not surprising.

A Suggestion Concerning the Improvement of Birth Registration.

The operation of the vital statistics law is constantly improving and as far as the registration of deaths is concerned we are now confident that Maryland will appear at the next Decennial Census among the Registration States, a distinction which we have been over-long in attaining.

With respect to the registration of births we are far less successful. We do not know at all the rate of natural increase of population in this State, and this knowledge is of great importance in interpreting our mortality accounts, and also in making wise provision for the future of our public schools. The people of this State have been always accustomed to the use of makeshifts rather than systematic records, so that it has not been easy to impress them with the value of records of births. We are not in bad contrast with the people of other States in this regard, for the registration of births has been generally neglected over the United States. Within the past two years, however, the country has been distinctly aroused on this subject, and within a year the Federal Congress passed a resolution directing the attention of all State governments to the necessity of uniform and accurate methods of registering both births and deaths. The Census Bureau has been made a permanent arm of the National Government for the special purpose of handling the vital data of the United States, and is exerting its influence to bring about uniformity of practice and the completeness of results. There is not the slightest doubt that marked advances are shortly to be made in this work throughout the country, for it is everywhere in a backward condition, and its growing importance has become generally recognized. Consider for a

moment that our population can only increase through the birth rate or through a favorable balance of migration among the people, that we do not know what part of our natural increase is due to births, nor what part, if any, is due to immigration; reflect further that more than 30 per cent. of our population is under the age of 15 years, and that upon this part of the population nearly all the money provided by taxation is expended, and I think your Excellency will perceive the need of constant and accurate information concerning the course and the rate of growth of our population.

An increased registration of births in Maryland can be brought about by amending the law on the subject, but the law cannot be profitably amended without increasing the expense of its administration. The desired results could, we think, be brought about by emphasizing the material interest of the people in the registration of births, and this can be done without amending the registration law itself.

Actual material interest in birth registration already exists, but is unrecognized. A great number and variety of privileges and immunities depend upon attained age; the right to attend school, to hold or to transfer property, to marry, to vote, to hold office, to enter the civil and military service of the State and country, exemption from military service, jury duty, responsibility for crime, all of these things depend upon attained age, and when any of these privileges or immunities are in question all sorts of makeshifts are employed to prove attained age. The most satisfactory evidence of attained age is a copy of one's own certificate.

If the laws on all these subjects required persons whose attained ages were called in question to present some written and attested evidence of attained age, it would immediately become materially important to register births and deaths at the time of their occurrence.

We propose, therefore, that all new legislation affecting any of the rights and immunities which are conditioned upon attained age shall contain a provision requiring that persons claiming any of these rights or immunities shall present certified copies of their birth certificates, or some other written and attested evidence of attained age. Such a provision could be so liberally expressed as to offer no more than a

trifling inconvenience to those whose births have not been anywhere recorded; their situation would, indeed, be just what it is at present, while those whose births are recorded will within twenty years be a majority of the people of the State. The law has been in operation since 1898, and county registrars are now in possession of the birth records of a majority of those who will begin school attendance in 1904.

If we had some such means of checking the claims of citizens upon the privileges and immunities offered by the State, we should not only be enabled to provide more accurately for the increase of the younger population, but we should also probably find that many persons claim certain privileges earlier than they should, and that certain other privileges are held for longer periods than the law allows. For instance, it will probably be found that many young people are protracting their school life, at the cost of the State, for several years after they should have taken up their working life.

Reflecting again that more than one-third of the population will always be under the age of twenty-one, and that in any event a period of years must pass before the advantages of birth registration can be made available for the whole population, we must choose whether we shall cover that interval by peremptory legislation, or by the easy and natural extension of birth registration under the Act of 1898. What we ask is merely the explicit recognition in other statutes of the existing law on birth registration, so that whenever citizens claim any of the privileges and immunities depending on attained age inquiry may be made for the official evidence of attained age.

Local Boards of Health—A Plan for Increasing Their Efficiency.

Comparing the present sanitary organization of the State with that of a few years ago it appears that substantial progress has been made. Nevertheless, the existing conditions are not satisfactory, and cannot become satisfactory until local boards of health are properly equipped. The laws on the subject preserve the idea of local self-government, and provide for thoroughly equipped organization. The county

is the established unit, and ample powers are conferred upon the county commissioners to organize and equip efficient boards of health. All of the counties now comply with the letter of the law, though some of them do not conform to its spirit. Many of the incorporated towns have good charter provisions for boards of health, so that there are now fifty-three local boards of health in the State. The best of them are very good, and the poorest are very poor, some of them so inefficient that the money spent upon them is little better than wasted. Now is the time to mend this fault. If the principle of local government of counties is not developed now, we shall in a few years find the State covered with numerous town boards of health acting under charter provisions, working independently of each other, often at variance among themselves, without definite responsibility to any central authority, and practically incapable of the co-ordinated activity upon which the safety of the State depends. Such is the status of affairs in several more populous States at this time, and such conditions in part explain the indifferent success that some States have experienced in dealing with the present epidemic of small-pox in the United States.

In most of the counties of Maryland the erroneous view prevails that boards of health are useful only in towns, and that rural districts need no sanitary supervision. The practical insufficiency of such a method of organization has been amply demonstrated in the neighboring States of Delaware, Pennsylvania, West Virginia and Virginia, where small-pox in the rural districts has been neglected or poorly managed, and has persisted in spite of the town boards of health. In Maryland the sanitary organization, poor as it is, covers the whole State, and if the twenty-three local jurisdictions were brought up to a respectable standard of effectiveness our defenses would be ample. The tendency of the county boards to pay special attention to towns and to neglect the rural districts exists, however, and has furnished several examples of failure to keep small-pox within reasonable control. Four Maryland counties have each had in one year more small-pox than the City of Baltimore has had in five years.

Small-pox visits us but occasionally, and the damage inflicted by this disease is not worth one moment's consideration besides

the harm done by common infections against which the fuller county boards make no effort whatever. The county boards must be strengthened, and their supremacy in their political limits must be maintained. The existing method of organization of county boards of health is good and should not be disturbed.

In practice, however, one finds that county commissioners, who compose the boards of health, are often quite ignorant of sanitary operations, and cannot, during their short terms, become informed upon these subjects. They must appoint a physician as health officer, and they often prefer that the office shall be accepted as a sinecure. As a sinecure, the office is often accepted and administered. The county commissioners very rarely meet as boards of health. Many of them do not desire or expect any report from their health officers, and some of them refuse to sit at all as boards of health. The men selected as health officers are, as a rule, respectable physicians, but they seldom have any practical familiarity with their official duties. After his appointment, the health officer usually waits for an emergency to begin his practical education. He learns nothing about the restriction of the common diseases always prevalent about him, for the county commissioners have not authorized him, and perhaps have even forbidden him, to do the simple things which are required by law. Unless the public mind grows excited about an unusual kind or amount of sickness, the county health officer may conclude his official term without having done his community a penny's worth of professional service and without having gained a penny's worth of knowledge or skill in sanitation. Such is the status of sanitary administration in one-third of the counties of Maryland, and it is very expensive. Let us emphasize the point that this neglect is expensive. The expense as expressed in the waste of money on the maintenance of such boards is very slight. When these idle boards are confronted with what they consider to be emergencies, it simply means that they have been caught asleep. Moreover, when they do proceed they incur much unnecessary expense and all the injurious accompaniments of haste and alarm. Even in the presence of familiar diseases, such as measles, scarlet fever, diphtheria,

whooping-cough, typhoid fever, local health officers sometimes grow suddenly very active under the stimulus of popular excitement and do very extravagant and unnecessary things. It would be hard to estimate the annual loss to the State from closing public schools on account of infectious diseases, but the loss is certainly greater than the amount of money paid in salaries to all the health officers in the State. It is an irrational and unnecessary practice, and would disappear if health officers were instructed in the more definite and less expensive methods of controlling transmissible diseases. This is but an illustration of a common sort of hygienic error.

Unwise and costly restrictions of personal liberty, disturbances of private business, sometimes of the peace and comfort of whole communities, add to the cost of inexpert sanitary government. The law never intended that preventive measures should cost as much or nearly as much, in time, or money, or discomfort, as the diseases against which they are directed.

Under the false idea that prevails, some boards of health exist only for the purpose of suppressing epidemics, whereas their true function is to prevent epidemics. This notion that boards of health are of merely occasional utility is also very expensive. Our experience included the history of one small epidemic costing a county over \$500, which beyond all doubt would never have occurred if the local board, actually in possession of exact and timely information, had spent the one dollar which the emergency called for. This is a very definite instance, but we know of others where one-tenth, one-fifteenth, or one-twentieth of the amount eventually spent, if applied at the right time and place, would have met every need of the situation.

All this waste grows out of ignorance, and much of it could be avoided if we could bring the weaker boards of health in Maryland up to the level of the best boards. To do this requires but little more than that the boards shall all be assembled once a year at one place for the purpose of learning their duties, exchanging their experience, and perfecting their methods. We propose for your Excellency's consideration an annual normal school for health officers. We have

tried to get the health officers together for these purposes at the meetings of the Maryland Public Health Association, but we find in general that only more advanced boards of health attend these meetings. The Maryland Public Health Association has had no influence whatever on the weaker local boards. The Maryland Public Health Association has, however, furnished to other States an idea which has been several times improved upon so that a few States now maintain annual conferences or schools for health officers which realize in a large measure the purposes which we have not accomplished in Maryland.

Having examined a number of these sanitary institutes, we believe that we can organize in Maryland a thoroughly practical plan for bringing the sanitary administration to a high average grade in efficiency. Our plan included the following features:

1st. An annual assembly of local health officers in the City of Baltimore to continue one week.

2d. Obligatory attendance of all local health officers; their actual and necessary expenses to be repaid by the State upon certification of actual attendance throughout the session.

3d. A minimum requirement of work from each and every man in attendance; not less than five hours out of six hours provided of lectures upon sanitation; not less than eight hours out of ten hours provided of free discussion on sanitary subjects; not less than five hours out of six hours provided of practical demonstration of sanitary operations; not less than five hours out of six hours provided of actual inspection of sanitary works.

We believe that if the local health officers of the State are put through such a week's exercise once a year, we shall not only raise the average efficiency of the local boards, but we shall remove the unpleasant and expensive features of restrictive procedures, and we shall create a popular demand for correct and methodical public health work.

Practically everything essential to the successful conduct of such an institute can be found in the State, and the entire expense would fall within an appropriation of \$2,000.

A Brief History of Small-pox in 1903.

The small-pox which broke out in the South in 1898 and spread northward and westward until it became a general epidemic in 1900 has visited Maryland every year, but without inflicting any serious damage. The adjoining States have suffered each year more than Maryland has, and the general prevalence of the disease in Pennsylvania and Delaware brought us more serious invasions in 1903 than have occurred in any year since 1882. Our experience in 1903 is not, however, comparable with that of 1882, for we had not less than 200 cases in 1903, while in 1882 there were several thousand cases.

The year 1903 opened with an outbreak well under way in Worcester county.

Allegany county suffered several invasions of small-pox during the year, and an outbreak caused by the mistaken diagnosis of local physicians was for a short time rather alarming. Cumberland, Frostburg, Westernport, Pinto and Lonaconing were all included, and the whole number of cases amounted to (between January 1 and December 9) fifty. Nine deaths resulted.

Most of the outbreaks have been well handled by the local authorities. Washington county had one small outbreak during the year; Frederick county, one; Garrett county, two; Queen Anne, one; Caroline, one; Talbot, one; Baltimore county, two, one of which was very badly managed. Kent county had an outbreak in Chestertown which was quite threatening for a time, but was quickly subdued after the town and county authorities had agreed upon a fair division of the pecuniary responsibility. Harford county had three outbreaks—one at Havre de Grace, one at Aberdeen, and one at Edgewood—all cut short with no damage. There were in all 115 cases up to December 10. Of these, eleven died.

We hoped at this time to be able to report in full upon the operations against small-pox which have gone on without intermission since 1890. But the disease at present prevails so extensively in every State adjoining Maryland that that subject is not yet ready for a final report. We summarize the history briefly by saying that in the past five years fifty-

seven outbreaks of small-pox have occurred outside of Baltimore, as follows: In Garrett county, three; in Allegany, twelve; in Frederick, two; in Washington, seven; in Howard, two; in Anne Arundel, one; in Montgomery, one; in Prince George, two; in Charles, one; in Kent, one; in Queen Anne, two; in Caroline, two; in Talbot, two; in Dorchester, four; in Wicomico, two; in Somerset, one; in Worcester, three. In all these fifty-seven outbreaks the source of infection has been traced to Baltimore but three times. The counties receiving their initial infection from Baltimore were: Wicomico, one case; Dorchester, one case; Baltimore county, one case. Baltimore city, on the other hand, traced three outbreaks to points within the State, twice in Baltimore county and once in Queen Anne. Other outbreaks traceable to Maryland sources are as follows: Allegany infected Washington county once, and Washington county infected Allegany. Prince George infected Anne Arundel once, Howard once, and Baltimore county once. Caroline, Queen Anne and Dorchester had a continuous outbreak along the Delaware line, and considered Delaware to be their common source of infection; but it is at least possible that the disease may have spread between Maryland counties. Three other outbreaks were traceable to sources within the same county. It is thus seen that of the fifty-seven distinctly recognized outbreaks forty-six had their source outside the State. A majority of the outbreaks did not extend beyond the house first infected, and eleven of the outbreaks were cut short at but one case of small-pox.

The several outbreaks of small-pox in 1903 are briefly described in their chronological order as follows:

ALLEGANY COUNTY.

The year 1903 opened with an outbreak in Cumberland. This originated about December 8 from a railroad man. There were thirteen cases in the outbreak—all in two families—and but one case fatal, that of an unvaccinated infant one month old. The outbreak was over, patients and contacts released, and disinfection done by the 24th of February.

A small outbreak occurred in Frostburg in the last week of December, 1902, and was concluded late in January, 1903. There were four or five cases, all recovering.

In April, 1903, an outbreak occurred at Luke. There were nine cases, all in one house. There were nine persons in the house, and but one of them had ever been vaccinated. This one, who suffered a mild attack, thinks that he was vaccinated in 1864. Some of these cases could have been prevented by vaccination after the household was attacked. The history of this family contrasts most markedly with the history of the many invalid households in Cumberland, where vaccination of all the inmates was done immediately upon the discovery of the infection, and without regard to the interval since the date of the first case.

The Secretary visited Cumberland on Sunday, May 17, in response to a telegram from the Health Officer, Dr. J. M. Spear. A case of small-pox had run its course under the mistaken diagnosis of chicken-pox, but two later cases in the same house caused the physicians to become suspicious. In another house a saloon-keeper had been attacked with what appeared to be delirium tremens. Eruption appeared in three or four days, the case became hemorrhagic, and his disease was recognized as small-pox and reported as such a few hours before the man died. Six cases arose from the first error of diagnosis, and several from the second.

On May 26, the Secretary visited Cumberland again. Very exaggerated rumors were afloat about the extent of the small-pox infection. There were said to be hundreds of cases in the town. The town was panic-stricken, and the neighboring towns were in a state of alarm. There were, in fact, fourteen cases in the Emergency Hospital, and the only other case then present in Cumberland was removed to the Emergency Hospital on the afternoon of May 26, making a total of fifteen cases. There was, however, another unpleasant surprise in preparation. A young man in the Western Maryland Hospital had developed small-pox about two weeks before this date, and immediately on his removal to the Emergency Hospital the Western Maryland Hospital had been closed.

Among the patients returned to their homes in Cumberland in closing the hospital was a young man convalescent from typhoid fever. This young man continued to mend for sixteen days after leaving the hospital, when he developed new

symptoms. The significance of the symptoms was overlooked, and on May 31 a prayer-meeting was held by his bedside, several persons being present. On the following day the young man's illness was clearly recognized as small-pox, and was so reported. On that day he died.

Vaccination was very actively pushed in Cumberland, and the cases reported were very promptly isolated in the Emergency Hospital. The houses were also promptly and thoroughly fumigated by the Health Officer, Dr. Spear. The isolation of contacts was not, however, strict enough to please the frightened people. Such rigid procedures as the people appeared to demand would have been unreasonably severe and would in fact have fostered the epidemic by leading to evasion and concealment. It appeared, however, that the information about exposed persons was in some cases quite incomplete, and the number of persons under surveillance much less than the number of those exposed. The authorities were, however, doing their very best. They were not excited nor intimidated by the harsh criticisms. Dr. H. S. Wailes was engaged to take exclusive charge of the contacts and exposed persons, and to report to the State Board of Health daily upon their condition. He was furnished with a list of the names of all persons living in each house where small-pox occurred, and of the names and addresses of all persons known to have been in contact with a case of small-pox within a period of eighteen days. Of such persons all those who were of good character and engaged in gainful occupations were allowed to give their parole to remain in town and to report at a given hour daily for inspection. They were all vaccinated, and their vaccinations were inspected daily. By this means it was promised that with the continuance of good management by the local board of health the outbreak could be terminated within two periods of incubation of forty-two days.

The last report to the State Board of Health was in fact made, and the last lot of contacts freed from medical observation on the fortieth day. The people of Cumberland exhibited unusual good sense in respect to the freedom of movement allowed to the exposed persons. Almost all those who had regular employment were allowed by their employers to continue at work. No suspicion arose that any of

the contacts conveyed the disease to other citizens. The last forty days of this serious outbreak of small-pox must indeed have been an impressive object lesson in the suppression of small-pox without the employment of very rigorous or burdensome measures. Samples of the blanks used in reporting these inspections are appended:

SMALL-POX.

Date.....1903.

FIRST REPORT.

TO THE STATE BOARD OF HEALTH:

Full Name of Householder.....

Address.....

Name of person attacked.....Color.....

Age.....Source of infection?.....

Ever vaccinated?.....Scar visible?.....Removed to hospital.....

 NAMES OF OTHER INMATES OF HOUSE.

	Age?	Pre- viously vac- cinated?	Quar- antined	Paroled	Wage earner?
.....
.....
.....
.....
.....
.....
.....

How many contacts outside the house?.....

(Signed).....

(Address).....

RULES.

Strict quarantine, under guard, till after disinfection.

Disinfection as soon as possible after removal of patient.

Vaccination and revaccination of all contacts; repeated if not successful.

Parole may be granted to trustworthy persons newly vaccinated, having clean clothes, living in non-infected or disinfected houses, and promising to be present at daily medical inspection.

Persons violating parole to be strictly quarantined.

Daily inspection of all contacts, whether inmates of the house or not.

Period of observation twenty days from date of last exposure.

SECOND REPORT TO THE STATE BOARD OF HEALTH,
SMALL-POX INSPECTION.

Date.....1903.

Address Name

Persons under observation?

Present at inspection?..... Vaccinations taking?.....

Revaccinated? Found sick?

Absent?..... Sent to hospital?.....

(Signed).....

(Address).....

FINAL REPORT ON SMALL-POX.

TO THE STATE BOARD OF HEALTH OF MARYLAND.

No. Street. Householder.

[illegible]

Names of Those Who
Escaped.

.....
.....
.....
.....
.....
.....
.....

Date.....190

.....M.D.

There were 78 cases in Allegany county during the year, counting ten persons whose attacks began in December, 1902. Of these, 72 were whites and 6 were colored. There were 44 males and 34 females. The deaths were 8, a fatality of 10.25 per cent. Fifty-nine cases occurred at Cumberland, three at Vale Summit, one at Pekin, one at Carlos, five at Frostburg, nine at Luke.

The advantage of vaccination after exposure was several times shown in the course of this outbreak. There were four persons in the Higgins household. One unvaccinated man was attacked. The three others were vaccinated after the exposure and all escaped. In the Stephens' house four persons were vaccinated after exposure, three escaped and one was attacked. In the Bullitt house six persons were vaccinated after exposure, one was attacked, five escaped. At the McNabb house, after two cases occurred, five remaining inmates were vaccinated and all escaped. Two persons in the house with Miller were vaccinated after exposure and both escaped. There were three cases in the Reed house, all occurring within three days and all in unvaccinated persons. The five remaining inmates of the house were vaccinated after exposure and all escaped. Six persons in the

Thomas house were vaccinated after exposure and all escaped. In the Gorman house nine persons were exposed. Three were not vaccinated and all three were attacked. Six were vaccinated and all escaped.

Five persons exposed to the Kight case were vaccinated after exposure and all escaped. Five persons exposed in the house of the Dulin case were vaccinated after exposure and all escaped. In the house of the Wise case were six people; all vaccinated after exposure and all escaping attack. In the house of the Everett case were two persons vaccinated after exposure and escaping attack. The Rushton house had five other persons; all vaccinated after exposure and all escaping attack.

The Martin case exposed four other persons; all vaccinated after exposure and all escaping attack. The Hill case exposed five other persons; all vaccinated after exposure and all escaping attack. The Clune cases occurred in a hotel, occupied by more than forty persons, not all of whom can be considered as equally exposed. There were four cases at the house between May 3 and May 30, when James Clune died. After his death thirty-eight persons in the hotel were vaccinated and all escaped attack.

Ten persons were exposed in the house with the Rank case; all vaccinated after exposure; all escaped. To the Feely case two were exposed; both vaccinated; both escaped. To the Rippie case five were exposed; all vaccinated; all escaped. To the Ray case about twenty persons were exposed; twenty vaccinated after exposure, and twenty escaped attack. In the house of the Blough boy were five other persons; all vaccinated after exposure; all escaped.

The Young case died on May 29, after four days' sickness. There was one other case in the house at the time, and twenty-three other persons besides. These twenty-three were all vaccinated after exposure and all escaped.

It must be remembered in considering this history that, besides vaccination after exposure, a majority of those exposed had also the advantage of prompt removal of the sick to the hospital, and disinfection of the house within a few hours thereafter. The record does not state how many of these

contacts had been vaccinated in previous years. The advantages of vaccination and revaccination after exposure are, nevertheless, very well demonstrated by the history.

One of these seventy-eight cases is most remarkable in that it occurred in the person of a trained nurse at the hospital. She had, of course, been vaccinated, though not successfully, since several years. Her attack was so mild that it would almost certainly have escaped diagnosis if it had occurred at another time and place. Small-pox in a trained nurse is of such exceeding rarity that every case observed should be recorded.

Perhaps a comment should be made on the closing of the Western Maryland Hospital after a case of small-pox occurred there. It may have been impracticable to detain the other patients in the hospital, and the responsibility for distribution of exposed persons to various parts of the city may not rest wholly on the hospital authorities. It was, however, an unwise step. The patients would have been quite as safe in the hospital as in their homes, perhaps safer, and public safety would have been better defended.

An account of a similar mistake made in Montreal is given in the article on small-pox in Osler's Practice of Medicine. The distinguished author describes events of which he had personal knowledge.

"On February 28, 1885, a Pullman-car conductor, who had travelled from Chicago, where the disease had been slightly prevalent, was admitted into the Hotel-Dieu, the civic small-pox hospital being at the time closed. Isolation was not carried out, and on April 1 a servant in the hospital died of small-pox.

"Following her decease, with a negligence absolutely criminal, the authorities of the hospital dismissed all patients, presenting no symptoms of contagion, who could go home. The disease spread like fire in dry grass, and within nine months there died in the city, of small-pox, 3,164 persons."

BALTIMORE COUNTY.

A single case of small-pox was present in Baltimore county in January, 1903. This was a young man who probably got his infection in Baltimore. It was an extremely

severe case, but he eventually recovered. The Sanitary Officer, Dr. Gorsuch, was able to protect both the community and the household, by means of vaccination, isolation and disinfection. No other case occurred.

An outbreak at a construction camp near Hombergville, in the Twelfth Election District, beginning early in April furnished an example of extremely bad management. The first case recognized was transferred to the Baltimore City Quarantine Hospital. The Health Officer in charge, Dr. Schofield, undertook to quarantine the men in the camp and to vaccinate them. He omitted, however, to count the men, and never knew how many were under his care. His quarantine, operated with the aid of the Baltimore county police, was ineffective, and an unknown number of men escaped. Fourteen days from the removal of the first case, Dr. Schofield lifted his quarantine. He was unable to report the number or the names either of those who left or those who remained in the camp on this date.

Among those who remained, small-pox broke out on the day following the release of quarantine. At a visit to the camp, Dr. Robins, Medical Assistant to the State Board of Health, found no successful vaccinations, while some unvaccinated persons then present in the camp said that they had not been offered vaccination. Quarantine was renewed. Two weeks later the quarantine was again released, and again the release was followed immediately by a fresh outbreak of small-pox in the camp. Again the vaccinations were found to have been ineffective, and no account was rendered of the number or names of the men under observation.

After each of these blunders protest was made to the County Commissioners against the very bad management of the outbreak. At the May meeting of the State Board of Health the Secretary was instructed to record and to transmit to the County Commissioners for Baltimore county "a minute expressing the judgment of the Board that the management of the recent outbreak of small-pox at Hombergville was so far ineffective as to endanger neighboring jurisdictions and to impair the credit of the local sanitary administration." The same incompetent sanitary officer was, however, reappointed in May for another term.

This outbreak included 17 cases.

On May 11 a mild case of variola was discovered in a colored boy living on Greenspring avenue, near Mt. Washington. The source of his infection was never made out. About three weeks earlier a colored man from that vicinity went to the dispensary of the City Hospital where he was found to be suffering with small-pox. He was removed to the City Quarantine Hospital. Perhaps he furnished the infection to the latter case. Vaccination was done in the neighborhood of the infected house and no more cases occurred.

GARRETT COUNTY.

An outbreak at Gorman began on January 31, and involved four persons all in one house. Of these four persons all were vaccinated on the date of appearance of the disease. One, a child of ten, was vaccinated on February 8th, nine days after exposure and eight days before his very mild attack of the disease was recognized. All these cases were mild, and all resulted in recovery.

Gorman is on the border line of West Virginia. On June 17, Dr. W. H. Ravenscroft, Health Officer for Garrett county, reported a case of small-pox near the West Virginia border. No further spread occurred in Maryland.

The next outbreak of small-pox in Garrett county was a serious one. It began about October 28, when a colored man named Clark was attacked in Oakland. He had been infected in Pittsburg. He had never been vaccinated. There were seven persons in this household, and but one of them had been vaccinated at the time of the outbreak. This person was the only one of the seven who escaped attack. One member of the Clark family was vaccinated after the outbreak occurred, but too late to avoid a mild attack.

A white family named Dewitt was next attacked on November 30. The first person attacked was a child aged 21 months, who died on December 6. The mother of this child died of hemorrhagic small-pox on December 16. Of the four persons in this house none had ever been vaccinated up to December 10, four days after the death of the infant and six days before the death of the mother. On December

to the two remaining inmates of the house were vaccinated for the first time. One was attacked four days later and the other five days later; both attacks being mild.

The Dewitt family infected eight other persons in Oakland. Of these eight persons seven had never been vaccinated, and one claimed to have been vaccinated seventeen years previously, but had no scar. A young man aged 28, never vaccinated, died on December 23 of hemorrhagic small-pox. These eight cases were in four separate houses, and besides those attacked the houses sheltered seventeen persons who escaped attack. Of these seventeen who escaped attack all were vaccinated.

One other case occurred in Oakland in 1903, a white lady aged 38, who had been vaccinated in infancy, and had a faint scar. Her attack, beginning December 20, was exceedingly mild. The only other inmate of the house was vaccinated and escaped attack.

There was an interval of several weeks after this case before small-pox appeared again in Oakland, but a more serious outbreak occurred in 1904, and will be reported upon later.

A small outbreak at Sunnyside was attributed to infection from Oakland. It began on December 18 when a white man aged 27, never vaccinated, was attacked by confluent small-pox. There were seven other persons in this house, making eight in all. Of these eight, four were attacked. Of the four, two were unvaccinated, and two had been vaccinated. All recovered. Of the four who escaped attack, all had been vaccinated.

FREDERICK COUNTY.

But one case was reported in Frederick county during the year, that of a white man, said to have been vaccinated about seventeen years previously, who was infected in Philadelphia, and had a mild attack, beginning about August 4.

HARFORD COUNTY.

Two cases of small-pox occurred near Belair in January, both in one house. They were promptly and effectively handled by the local board of health. No other spread occurred.

Late in January, 1903, small-pox appeared in a construction camp on the Maryland and Pennsylvania Railroad, near Belair. The origin of the infection is unknown. A colored man, having an eruption, left the camp with several companions and came to Baltimore. This information was transmitted to the State Board of Health by Dr. F. P. Smithson, Health Officer of Harford county, and by the State Board of Health to Dr. Bosley, Health Commissioner for Baltimore city. The names of the men were obtained later, and all were apprehended in Baltimore within a week. Three of them had small-pox and were sent to Quarantine Hospital. There was no further spread from this source.

About February 1 a white man, a travelling salesman, employed by the Wheeler & Wilson Sewing Machine Company, having headquarters in Camden, N. J., came to his home at Aberdeen, where he had an eruptive disease which was supposed to be chicken-pox. About two weeks later two other members of the same family were attacked with a similar, but severer eruption. They were not, however, very sick, and all recovered promptly.

On March 10 the Secretary of the State Board of Health was called by Dr. J. H. Kennedy, Health Officer of Aberdeen, to see a suspicious case, which probably belonged to the same series with that of the sewing machine agent. This patient, a colored woman, had a pronounced case of small-pox from which she recovered.

On the following day, March 11, the Secretary was called to Havre de Grace to see a suspicious case in the practice of Dr. R. H. Smith. The patient was a young white man, a hardware dealer, who about two months previously had visited the home of the sewing machine agent at Aberdeen on business.

The Havre de Grace merchant had a mild but unmistakable attack of small-pox. The Health Officer, Dr. J. Lee Hopkins, and the Mayor, Mr. Pusey, made immediate arrangements for the removal of the sick man to a temporary hospital outside of the town, and for the disinfecting of the store and dwelling.

Mr. B.'s wife and infant child were vaccinated at once. The baby developed a very mild attack. Both recovered.

Two houses at Cole postoffice were invaded in March, 1903. One of the patients was a man aged 75, who had the scar of a successful vaccination done in 1878. There were two other persons in the house, both vaccinated and both escaping attack.

The other case was one of confluent small-pox in a white boy, aged 16, who had never been vaccinated. There were three other persons in the house, all vaccinated and all escaping attack.

In July, 1903, a case occurred at Edgewood, the subject being a white boy, aged 14, who had a vaccination scar and had a mild attack. There were four other persons in this house. Two of them had small-pox many years ago. The other two were vaccinated after exposure, and all four escaped attack.

KENT COUNTY.

On January 18, 1903, a case of small-pox was discovered at Chestertown in the person of a colored child, who had been brought by her mother from Washington with the eruption then in progress. Kent county was without a health officer at the time, the office having been vacated sometime before by the removal of Dr. Urie to Baltimore. In the ignorant belief that a health officer is a merely ornamental functionary, the County Commissioners had failed to fill the vacancy.

The town commissioners sent the information to the State Board of Health. The Secretary being at the time away on official business, the Chestertown Commissioners asked Dr. C. Hampson Jones to visit the place.

The County Commissioners appointed Dr. Wm. R. Messick, Health Officer for the county, but took no other step of any sort to control the disease, holding that the burden of responsibility should rest on the authorities of Chestertown.

The Town Council had already built a detention camp and hospital when the Secretary visited the place on February 9. No general vaccination had been done or ordered, and, of course, the infection had spread. The County Commissioners were advised that they would be held to an undivided responsibility for the control of the situation, and were shown that the whole financial responsibility was also theirs.

The Town Council was at the same time advised that it would cost them a good deal to stand uncompromisingly on the letter of the law so far as their pecuniary responsibility was concerned, and that the controversy with the County Commissioners had already involved both parties in expense two or three times as great as the situation justified. The Town Council realized this, and agreed to pay half the cost. The County Board of Health gave, however, a most reluctant acceptance of their lawful duty.

On February 10 they met as a Board of Health and appropriated a sum of \$750 to cover the expenses for forty days from that date, provided that in the meantime a decision of the court should declare the Town Council of Chestertown not responsible for the expenses.

This action of the Commissioners having been reported to the State Board of Health, the county authorities were informed that their action was unsatisfactory to the State Board of Health, and that without the intervention of a court their responsibility, both for time and money, would end only with the complete suppression of small-pox.

The controversy between the Town Council and the County Commissioners at least doubled the cost of the outbreak.

It included in all eight cases, all colored, all ending in recovery. The outbreak covered nearly eleven weeks. With good management there should have been only three cases, and the entire period of expense should have been about six weeks.

TALBOT COUNTY.

On December 8, 1903, a colored glassblower, but a few days previously arrived from Philadelphia, was attacked with small-pox in Easton. The case was removed to an isolated house just outside the corporation limits. The two persons living in the Easton house escaped attack. One of them was vaccinated, the record being silent as to the other.

A visitor to this house was attacked about December 28. He had been vaccinated for the first time on December 19, nine days before his attack. There were four other persons in this second house, all vaccinated and all escaping attack.

A colored boy of 12 years, living near Easton, was also infected from the Philadelphia case, and was attacked on De-

ember 21. It is unknown whether he had ever been vaccinated, but of the five other persons in the house none had ever been vaccinated. These five persons were, however, all vaccinated after the infection appeared in the house, all with success and all escaping attack.

WASHINGTON COUNTY.

The town of Williamsport suffered a considerable outbreak of small-pox in 1902, and profited well by that experience. In March, 1903, a case came into Williamsport from Central Pennsylvania, but was recognized so promptly and handled so effectively that there was no spread beyond the house first infected.

WICOMICO COUNTY.

On June 11 Dr. Charles R. Truitt, Health Officer for Wicomico county, reported a case of small-pox in a young white man, who contracted his disease in Pennsylvania. Two other cases in the same house concluded this outbreak.

WORCESTER COUNTY.

The year 1903 opened with an outbreak of small-pox in progress in Worcester county. The outbreak arose from the case of a negro who came to Snow Hill from a neighboring State, and passed through a mild attack without any medical attention, and, perhaps, without any suspicion that he had small-pox. He left Snow Hill immediately upon his recovery. Of those who were in contact with this man the first to be attacked was a colored man, aged about sixty, who had never been vaccinated.

The local physicians, being, as most Maryland physicians are at present, unfamiliar with small-pox did not agree upon the diagnosis. They made some photographs of the case, which they sent to the State Board of Health without any history or opinion of the case. The diagnosis of small-pox was made and telegraphed to Snow Hill.

The Secretary visited the town at once, November 29, 1902, and obtained the history which has just been given. Two other cases were seen, one of them an anomalous case, having a very sparse eruption and quite unlike the usual variolous eruption. There were, however, close patches of eruption in

each popliteal space. The diagnosis would not have been made but for the association of a little girl with a young man in another family, who had an unmistakable attack of small-pox. The little girl's father was also attacked about a week later. The three cases last named were whites.

The Secretary also saw at Stockton a white man who had a very severe case of small-pox. He had been at Snow Hill during court week, and returning to his hotel very late one night found himself locked out. He spent the remainder of the night at a restaurant, where the first case was at that time convalescent.

The County Board of Health, as soon as their attention was called to the situation, moved promptly and vigorously. They speedily constructed a detention camp and hospital without the town limits of Snow Hill, and engaged a physician from Philadelphia to take charge. They also ordered a general vaccination.

The town authorities of Berlin, thirteen miles north of Snow Hill, on the Delaware, Maryland and Virginia Railroad, took an unwise step, which has fortunately been rarely taken in Maryland. They quarantined against both Snow Hill and Stockton. It was an idle as well as a barbarous precaution, for an unvaccinated white child in Berlin was attacked by small-pox, the source of her infection having been in all probability another child from Stockton, who spent an hour or so in her company at the depot while waiting for the west-bound train on the Baltimore, Chesapeake and Atlantic Railroad. The vaccination of this child at a cost of 50 cents would have saved the authorities of Berlin the cost of quarantine and the cost of small-pox as well.

There are said to have been about 100 cases in the Worcester county outbreak. This is the estimate of the Health Officer, Dr. Charles P. Jones, but it is probably too high. Particulars concerning every case should have been forwarded to the State Board of Health, and those who had charge of them made such returns for 51 cases in all. Almost certainly these 51 are a large majority of the cases.

An interesting circumstance connected with this outbreak was that a majority of the cases were whites. The colored population of Worcester county is proportionately large.

Two white children of school-going age were attacked in Berlin. In the whole list of 51 cases 14 were in children of school-going age, and 12 of these were enrolled as attending school and 9 of these were white. All of them were unvaccinated. This seemed to justify our laying a large share of the responsibility for the spread of small-pox upon the School Board of Worcester county. Naturally the School Board did not approve of this suggestion. They admitted, however, that it is difficult to enforce the vaccination law. It was freely said in public that it is quite easy to get an ineffective vaccination done and to get a certificate of precisely the same form as that given for a genuine vaccination. White children, it was said, are not unusually certified to be vaccinated after inoculations which are intended to be and are ineffective. A physician in Berlin is said to have sold a substance which, when taken into the stomach, affords an immunity like that of vaccination. This physician is also known to be an anti-vaccinationist, although he was for a time the vaccine physician for his district, and a good many school children are provided with his certificate. Colored children are vaccinated properly, and this explains the heavier incidence of small-pox in this outbreak upon the whites.

The teachers who had these unvaccinated children enrolled were all asked to explain their unprotected condition. It did not appear that the teachers were wilfully negligent. Only one of them was unable to present certificates. This teacher had been but a few weeks in charge of the school, and the children attacked were enrolled before she took charge. In another school three children of one family had small-pox. They had certificates, but had never in fact been vaccinated.

The Worcester county outbreak came to an end about the 5th of March.

JOHN S. FULTON,
Secretary.

Report of the Bacteriologist.

January 13, 1904.

DR. JOHN S. FULTON,

Secretary of the State Board of Health.

DEAR SIR: I hereby respectfully submit my report on the work performed in the Bacteriological Laboratory from December 11, 1901, to January 13, 1903.

Examinations for Physicians for the Detection of Disease.

TABLE No. 1.

Examinations of blood for the typhoid reaction: Positive reactions, 271; negative reactions, 249; suspicious reactions, 25; unsatisfactory, 3. Total, 548.

Examinations of sputum for tuberculosis: Tubercle bacilli present, 141; tubercle bacilli not present, 285; suspicious, 1; unsatisfactory, 4. Total, 431.

Examinations of suspected diphtheria: Positive cases, 145; negative cases, 308; suspicious cases, 1; unsatisfactory, 1. Total, 455.

Examinations of blood for suspected malaria: Positive cases, 2; negative cases, 165; unsatisfactory, 6. Total, 173.

Examinations of drinking water, 162.

Examinations of milk, 4.

Examinations of food, 17.

Examinations for rabies, 1.

Total number of examinations for physicians, 1,390.

Gross and Microscopic Examination of Diseased Food Products.

A number of specimens have been brought to the laboratory by the Food Inspector for examination, and the following table shows the results of the gross and microscopic examinations. These specimens were mainly obtained from the Union Abattoir, receiving about 5,000 cattle weekly.

Human beings can contract such diseases as tuberculosis, actinomycosis (lump-jaw), tape-worm, hydatid disease, and trichinosis from diseased animals used as food, and the examinations were made to detect the presence of such diseases.

Table No. 2 shows the result of these examinations in detail.

TABLE No. 2.

Abscess formation.....	4
Diseased skin (hog cholera).....	4
Tuberculosis.....	6
Actinomycosis	17
Sarcoma of lung.....	1
Infection with B. bovisepiticus	1
Milk. Garget and streptococcus infection.....	2
Miscellaneous.....	3
Total	38

Table No. 3 will show the examination of wells and public water supplies which have been made during the past year.

TABLE NO. 3.—TABULAR REPORT OF WATER EXAMINATIONS.

TAP, STREAM, WELL OR SPRING.	Date.	Colonies Per c. c.		Colon Bacillus.	Quality.
		Aerobic.	Anaerobic.		
Marshall's spring, Brookville.....	Dec. 12	Liquefied	39	None in 1 or 50 c. c.	Good
Howard's pump, Brookville.....	Dec. 12	Liquefied	26	Present in 50 c. c.	Bad
Miller's pump, Brookville.....	Dec. 12	Liquefied	142	None in 1 or 50 c. c.	Suspicious
Valley House spring, Brookville.....	Dec. 12	Liquefied	25	Present in 1 c. c.	Bad
Howard's Store pump, Brookville.....	Dec. 12	Liquefied	55	None in 1 or 50 c. c.	Good
Howard House W. M. pump, Brookville.....	Dec. 12	Liquefied	29	Present in 1 and 50 c. c.	Bad
Dr. Green's well, Brookville.....	Dec. 12	Liquefied	100	Present in 1 c. c.	Bad
Md. Agricultural College (from tank).....	Dec. 20	780	125	None in 1 or 50 c. c.	Fair
Md. Agricultural College—above intake.....	Dec. 20	2460	320	Present in 50 c. c.	Bad
Md. Agricultural College—intake.....	Dec. 20	1440	103	Present in 1 c. c.	Bad
Md. Ag. College, No. 2, drinking trough.....	Dec. 31	16	0	Present in 50 c. c.	Bad
Md. Agricultural College, No 3, well.....	Dec. 31	238	38	None in 1 or 50 c. c.	Good
Colletan's well, Baltimore County.....	Jan. 6	5100	2400	Present in 50 c. c.	Bad
Wood's well, Baltimore County.....	Jan. 6	45	0	None in 1 or 50 c. c.	Good
Parsley's pump (store), Baltimore County...	Jan. 6	930	0	Present in 50 c. c.	Bad
Weer's spring, Baltimore County.....	Jan. 6	76	2	Present in 50 c. c.	Bad
Public pump, Lutherville.....	Jan. 6	950	20	Present in 50 c. c.	Bad
Whiteside's pump, Baltimore County.....	Jan. 6	520	75	Present in 50 c. c.	Bad
Francis S. Kemp, Harrisonville.....	Jan. 22	500000	0	Present in 50 c. c.	Bad
John A. Clopper, Rohrsersville.....	Jan. 22	5	0	Present in 50 c. c.	Bad
Robert McCoy, Rohrsersville.....	Jan. 22	150	125	Present in 50 c. c.	Bad
M. Gouff, Rohrsersville.....	Jan. 22	672	113	Present in 50 c. c.	Bad
C. D. Baker, Rohrsersville.....	Jan. 22	120	47	Present in 50 c. c.	Bad
Scott Mullendore, Rohrsersville.....	Jan. 22	5220	290	None in 1 or 50 c. c.	Bad— Too many bacteria
Jacob Buck, Rohrsersville.....	Jan. 22	3200	120	Present in 50 c. c.	Bad

TABLE No. 3—CONTINUED.

TAP, STREAM, WELL OR SPRING.	Date.	Colonies Per c.c.		Colon Bacillus.	Quality.
		Aerobic.	Anaerobic.		
E. D. Miller, Rohrsersville.....	Jan. 22	180	37	Present in 50 c.c.	Bad
John Smith, Rohrsersville, well.....	Jan. 22	35	58	Present in 50 c.c.	Bad
Silas Norris, Rohrsersville.....	Jan. 22	11	54	Present in 50 c.c.	Bad
Martin T. Rohrer, Rohrsersville.....	Jan. 22	636	36	Present in 50 c.c.	Bad
John A. B. Potter, Rohrsersville.....	Jan. 22	2040	78	Present in 50 c.c.	Bad
David Barkman, Rohrsersville.....	Jan. 22	288	122	Present in 1 and 50 c.c.	Bad
Millard Haynes, Rohrsersville.....	Feb. 13	744	138	Present in 50 c.c.	Bad
H. C. Hightman, Rohrsersville.....	Feb. 13	444	95	Present in 50 c.c.	Bad
John Dick, Rohrsersville, well.....	Feb. 13	356	70	Present in 50 c.c.	Bad
D. A. Rohrer, Trego, well.....	Feb. 13	404	126	Present in 50 c.c.	Bad
Mrs. Maria Mullendore, Trego, well.....	Feb. 13	486	207	Present in 50 c.c.	Bad
Dan. Easton, Rohrsersville, well.....	Feb. 13	474	182	None in 1 or 50 c.c.	Fair
John F. Stine, Rohrsersville, cistern.....	Feb. 13	894	1080	Present in 50 c.c.	Bad
John Geltmacher, Rohrsersville, well.....	Feb. 13	69	23	None in 1 or 50 c.c.	Good
Valley street well, Cumberland.....	Feb. 20	106	132	Present in 50 c.c.	Bad
Kornhoff's well, Cumberland.....	Feb. 20	1446	71	Present in 1 and 50 c.c.	Bad
Russell Clopper, Rohrsersville.....	Mar. 29	302	52	Present in 50 c.c.	Bad
G. M. Beeler, Rohrsersville, cistern.....	Mar. 28	350	0	None in 1 or 50 c.c.	Good
D. F. Smith, Rohrsersville, well.....	Mar. 28	486	0	None in 1 or 50 c.c.	Good
Samuel Stine, Trego, spring.....	Mar. 28	35	225	None in 1 or 50 c.c.	Good
Ezra J. Long, Rohrsersville, cistern.....	Mar. 28	8880	0	Present in 50 c.c.	Bad
Depot well, Elkton.....	Mar. 25	95	0	Present in 50 c.c.	Good
Mrs. A. M. Hilaman, Iron Hill.....	Mar. 25	219	15	None in 1 or 50 c.c.	Suspicious—
Mt. St. Agnes' public supply.....	Mar. 26	1620	18	None in 1 or 50 c.c.	Too many bacteria
Mt. St. Agnes, Mt. Washington, well.....	Mar. 26	210	35	Present in 50 c.c.	Bad

Mt. St. Agnes, Mt. Washington, spring.....	Mar. 26	70	0	None in 1 or 50 c.c.	Good
Jesse Carr, Haron, spring.....	Mar. 26	528	150	None in 1 or 50 c.c.	Good
Mt. Washington Water Works Co.....	April 26	660	18	None in 1 or 50 c.c.	Fair
Mt. St. Agnes, ice from ice-pond.....	April 21	11280	540	None in 1 or 50 c.c.	Bad— Too many bacteria
Havre de Grace Water Co., intake.....	May 20	474	1	Present in 50 c.c.	Bad
Havre de Grace, above P., W. & B. R. R. bridge.....	May 20	350	0	Present in 50 c.c.	Bad
Havre de Grace, one mile above P., W. & B. R. R. bridge.....	May 20	201	35	None in 1 or 50 c.c.	Good
Havre de Grace, sample from above canal.....	May 20	364	121	None in 1 or 50 c.c.	Good
Gernaund's well, No. 2, Mt. Washington.....	May 12	22	9	None in 1 or 50 c.c.	Good
James Piper's spring, Sherwood, Balto. Co.....	June 3	36	4	None in 1 or 50 c.c.	Good
Heyser spring, Hagerstown, trough.....	July 14	1800	72	Present in 1 and 50 c.c.	Bad
Heyser spring, Hagerstown, pipe.....	July 14	120	1	None in 1 or 50 c.c.	Good
Guilford village well.....	Aug. 1	13320	.....	Present in 1 and 50 c.c.	Bad
T. C. Baldwin, M D.....	Aug. 9	20	0	None in 1 or 50 c.c.	Good
Jas. & Wm. K. Bartlett, Easton, No. 1.....	Aug. 18	Liquefied	Liquefied	None in 1 or 50 c.c.	Suspicious
Jas. & Wm. K. Bartlett, Easton, No. 2.....	Aug. 18	Liquefied	Liquefied	Present in 1 c.c.	Bad
Jas. & Wm. K. Bartlett, Easton, No. 3.....	Aug. 18	Liquefied	Liquefied	Present in 1 c.c.	Bad
Citizens' Water Company.....	Aug. 18	Liquefied	Liquefied	Present in 1 or 50 c.c.	Bad
Robert McLane, well.....	Aug. 22	4590	1572	Present in 50 c.c.	Bad
Robert McLane, ice.....	Aug. 22	8484	600	Present in 50 c.c.	Very bad
Brown's well. Sent in by Dr. Stiers.....	Sep. 1	6380	428	None in 1 or 50 c.c.	Bad— Too many bacteria
Dr. Stiers, Magnolia, No. 1.....	Sep. 9	150	0	None in 1 or 50 c.c.	Good
Dr. Stiers, Magnolia, No. 2.....	Sep. 9	500	50	None in 1 or 50 c.c.	Good
Dr. Stiers, Magnolia, No. 3.....	Sep. 9	59	0	None in 1 or 50 c.c.	Good
Dr. Stiers, Magnolia, No. 4.....	Sep. 9	6000	450	None in 1 or 50 c.c.	Bad— Too many bacteria
Dr. Stiers' Magnolia, No. 5.....	Sep. 9	220	0	None in 1 or 50 c.c.	Good
Cogswell's well, Govanstown.....	Sep. 12	330	73	None in 1 or 50 c.c.	Good
Mr. McLane's well, Garrison, Baltimore co.....	Sep. 16	3	0	None in 1 or 50 c.c.	Good
Riverview Park, Baltimore county.....	Sep. 16	585	0	None in 1 or 50 c.c.	Fair

TABLE NO. 3—CONTINUED.

TAP, STREAM, WELL OR SPRING.	Date.	Colonies Per c.c.		Colon Bacillus.	Quality.
		Aerobic.	Anaerobic.		
No. 1, Dr. Bennum, Girdletree	Sep. 16	13	0	None in 1 or 50 c.c.	Good
No. 2, Dr. Bennum, Girdletree	Sep. 16	5400	5	None in 1 or 50 c.c.	Bad— Too many bacteria
Mrs. Carroll, Warwick	Sep. 16	6000	304	None in 1 or 50 c.c.	Bad— Too many bacteria
R. D. Aiken, Warwick	Sep. 16	48	7	None in 1 or 50 c.c.	Good
Light-cap Hill, Warwick	Sep. 16	352	67	Present in 50 c.c.	Bad
David Thornton, Warwick	Sep. 16	300	84	Present in 50 c.c.	Bad
Garrett Lockman, Warwick	Sep. 16	1260	840	None in 1 or 50 c.c.	Fair
Carsery well, Warwick	Sep. 16	9	7	None in 1 or 50 c.c.	Good
Galloway, Md.	Sep. 16	840	100	None in 1 or 50 c.c.	Fair
Mrs. Lydia Wyand, Keedysville	Sep. 21	18	4	Present in 50 c.c.	Bad
Line House well, Keedysville	Sep. 24.	120	14	Present in 1 and 50 c.c.	Bad
Riverview Park well	Sep. 24	10000	0	None in 1 or 50 c.c.	Bad— Too many bacteria
Chattolane Springs	Sep. 29	336	0	None in 1 or 50 c.c.	Good
Jacob Dallam, Perryman, spring	Sep. 29	1000	4	None in 1 or 50 c.c.	Fair
Jacob Dallam, Perryman, well	Sep. 29	800	28	Present in 1 c.c.	Bad
Galloway, ice pond	Oct. 7	200	180	None in one or 50 c.c.	Good
Philbin's well, Galloway	Oct. 7	144	0	None in 1 or 50 c.c.	Good
Cheston well, Galloway	Oct. 7	5	0	Present in 1 c.c.	Bad
Wm. H. Pope, Chevy Chase	Oct. 15	5000	100	Present in 1 and 50 c.c.	Bad
H. H. Moore, Union Bridge, well	Oct. 15	3000	50	Present in 50 c.c.	Bad
Mrs. Hooker, Union Bridge, well	Oct. 15	10000	4500	None in one or 50 c.c.	Bad— Too many bacteria
Rudiger, collected by Dr. Robins.	Oct. 20	5000	10	Present in 1 c.c.	Bad

Rudiger, store at station, collected by Dr.	Oct.	20	5000	0	Present in 50 c.c.	Bad
Robins.....	Oct.	25	1000	660	None in 1 or 50 c.c.	Good
H. T. Harrison, M.D., Loch Raven.....	Oct.	29	1500	2400	Present in 50 c.c.	Bad
Charles R. Foutz, M.D., Westminster, No. 1.	Oct.	29	2100	1560	Present in 1 c.c.	Bad
Charles R. Foutz, M.D., Westminster, No. 2.	Oct.	29	2910	500	None in 1 or 50 c.c.	Fair
Water Department, No. 1.....	Oct.	28	240	8	None in 1 or 50 c.c.	Good
Water Department, No. 2.....	Oct.	28	6000	220	None in 1 or 50 c.c.	Fair
Water Department, No. 3.....	Oct.	28	4800	0	None in 1 or 50 c.c.	Fair
Water Department, No. 4.....	Oct.	28	870	124	Present in 1 c.c.	Bad
Water Department, No. 5.....	Nov.	3	1500	74	Present in 50 c.c.	Bad
Water Department, No. 6.....	Nov.	3	6000	1320	None in 1 or 50 c.c.	Good
Water Department, No. 7.....	Nov.	3	1872	480	None in 1 or 50 c.c.	Fair
Water Department, No. 8.....	Nov.	3	960	24	None in 50 c.c.	Bad
Water Department, No. 9.....	Nov.	3	756	84	None in one or 50 c.c.	Fair
Water Department, No. 10.....	Nov.	5	758	156	Present in 1 c.c.	Bad
Water Department, No. 11.....	Nov.	5	420	240	None in 1 or 50 c.c.	Fair
Water Department, No. 12.....	Nov.	5	5100	48	None in 1 or 50 c.c.	Good
Water Department, No. 13.....	Nov.	11	4200	360	Present in 1 and 50 c.c.	Bad
Water Department, No. 14.....	Nov.	11	6000	600	Present in 1 and 50 c.c.	Bad
Water Department, No. 15.....	Nov.	11	6000	500	Present in 50 c.c.	Bad
Water Department, No. 16.....	Nov.	11	6000	100	None in 1 or 50 c.c.	Fair
Water Department, No. 17.....	Nov.	11	6120	60	None in 1 or 50 c.c.	Bad—
Samuel C. Trippe, M.D., No. 1.....	Nov.	14			Too many bacteria	
Samuel C. Trippe, M.D., No. 2.....	Nov.	14	212	36	None in 1 or 50 c.c.	Good
Daniel B. Sprecher, M.D., No. 1.....	Nov.	18	88	5	None in 1 or 50 c.c.	Good
Daniel B. Sprecher, M.D., No. 2, well.....	Nov.	18	2	5	None in 1 or 50 c.c.	Good
Daniel B. Sprecher, M.D., Sykesville, No. 3, well.....	Nov.	18	2400	12	Present in 50 c.c.	Bad
Daniel B. Sprecher, M.D., abandoned well, No. 4.....	Nov.	18				No specimen sent
Daniel B. Sprecher, M.D., No. 5, spring.....	Nov.	18	420	240	Present in 1 and 50 c.c.	Bad
Daniel B. Sprecher, M.D., No. 6, spring.....	Nov.	18	10	10	Present in 1 c.c.	Bad
Daniel B. Sprecher, M.D., No. 7, well.....	Nov.	18	312	1	Present in 50 c.c.	Bad

TABLE No. 3—CONTINUED.

TAP, STREAM, WELL OR SPRING.	Date.	Colonies Per c.c.		Colon Bacillus.	Quality.
		Aerobic.	Anaerobic.		
Daniel B. Sprecher, M.D., No. 8, well.....	Nov. 18	1350	64	Present in 1 c.c.	Bad
Daniel B. Sprecher, M.D., No. 9, stream.....	Nov. 18	3220	110	None in 1 or 50 c.c.	Bad— Too many bacteria
Daniel B. Sprecher, M.D., No. 10, spring.....	Nov. 18	6240	7	Present in 1 and 50 c.c.	Very bad
James Bordley, M.D., No. 1, well.....	Dec. 8	156	0	None in 1 or 50 c.c.	Good
James Bordley, M.D., No. 2, well.....	Dec. 8	300	0	None in 1 or 50 c.c.	Good
H. F. Nichols, M.D., Hurlock, well.....	Dec. 8	294	2*	None in 1 or 50 c.c.	Good
G. M. Stump, M.D., Perryville, well.....	Dec. 17	21200	0	None in 1 or 50 c.c.	Bad— Too many bacteria
Dr. F. P. Smithson, Forest Hill, No. 1, well.....	Dec. 22	120	60	None in 1 or 50 c.c.	Good
Dr. F. P. Smithson, Forest Hill, No. 2, well.....	Dec. 22	204	18	None in 1 or 50 c.c.	Good
Dr. F. P. Smithson, Forest Hill, No. 3, well.....	Dec. 22	78	0	None in 1 or 50 c.c.	Good
Dr. R. B. Farquhar, Rockville, No. 1, spring.....	Jan. 9	344	0	None in 1 or 50 c.c.	Good
Dr. R. B. Farquhar, Rockville, No. 2, spring.....	Jan. 9	8	0	None in 1 or 50 c.c.	Good
Irwin Buffert, Powhatan P. O., well.....	Jan. 17	2000	600	None in 1 or 50 c.c.	Suspicious— Too many bacteria
St. Thomas' Rectory, No. 1, Owings Mills.....	Mar. 31	25	1	None in 1 or 50 c.c.	Good
St. Thomas' Rectory, No. 2, Owings Mills.....	Mar. 31	21	0	None in 1 or 50 c.c.	Good
Mrs. John McClanahan, Port Deposit, spring.....	April 21	1	0	None in 1 or 50 c.c.	Good
E. J. Rhinehart, Port Deposit, spring.....	April 21	270	14	None in 1 or 50 c.c.	Good
Town Water, Port Deposit, reservoir.....	April 21	500	8	Present in 1 and 50 c.c.	Bad
Peter Hamilton, Laurel, well.....	April 27	300	5	Present in 1 and 50 c.c.	Bad
Mrs. J. M. McClanahan, Port Deposit, spring.....	April 30	10	2	None in 1 or 50 c.c.	Good
Mr. Rhinehart, Port Deposit, spigot from spring.....	April 30	20	0	None in 1 or 50 c.c.	Good
Town supply, Port Deposit, spigot.....	April 30	Liquefied	2	Present in 1 or 50 c.c.	Bad

J. H. Neudecker, Tuxedo Park, spigot in kitchen.....	May 5	Liquefied	10	Present in 1 c.c.	Bad
J. H. Neudecker, Tuxedo Park, spigot in stable.....	May 5	Liquefied	8	Present in 50 c.c.	Bad
Maryland Asylum for Feeble-minded, Owings Mills, well.....	May 11	35	0	None present in 1 or 50 c.c.	Good
Maryland Asylum for Feeble-minded, Owings Mills, spring.....	May 11	35	0	None in 1 or 50 c.c.	Good
Bauer, Havre de Grace, pump	May 26	4500	Liquefied	None in 1 or 50 c.c.	Good
Pumping station, Havre de Grace	May 26	Liquefied	1	None in 1 or 50 c.c.	Good
Mrs. Cloak, Havre de Grace, town supply.....	May 26	Liquefied	6	Present in 1 c.c.	Bad
No. 1, Pump station, Embla Park, spigot.....	May 27	10	20	None in 1 or 50 c.c.	Good
No. 2, J. L. Hess, Lynwood avenue, Tuxedo	May 27	10	3	Present in 1 or 50 c.c.	Bad
No. 3, Open spring, Embla Park Water Co.	May 27	3	25	None in 1 or 50 c.c.	Good
No. 4, Edwin Hebden, Tuxedo, spigot.....	May 27	35	50	Present in 1 and 50 c.c.	Bad
No. 5, Hurlbutt, Embla Park, spigot.....	May 27	56	5	None in 1 or 50 c.c.	Good
No. 6, Dr. Smart, Roland Park	May 27	35	0	None in 1 or 50 c.c.	Good
No. 7, Hy. Hamm, Gladstone ave., Tuxedo.	May 27	600	0	Present in 1 and 50 c.c.	Bad
No. 8, Roland Park, Public School.....	May 27	15	15	None in 1 or 50 c.c.	Good
Mr. Walter Townsend, Stemmer's Run	May 25	Liquefied	6	Present in 50 c.c.	Bad
West street, Annapolis, pump.....	May 28	27	4	None in 1 or 50 c.c.	Good
Courthouse, Annapolis, pump	May 28	2	0	None in 1 or 50 c.c.	Good
Jefferson Place, Annapolis, pump.....	May 28	320	9	None in 1 or 50 c.c.	Good
Wagner street, Annapolis, pump.....	May 28	35	1	Present in 50 c.c.	Bad
Cathedral street, Annapolis, pump.....	May 28	1500	3900	None in 1 or 50 c.c.	Bad—
Maryland avenue, Annapolis, pump.....	May 28	4	0	None in 1 or 50 c.c.	Too many bacteria
Bladen street extended, Annapolis, pump...	May 28	3740	• 1050	None in 1 or 50 c.c.	Good
Hotel Maryland, town supply, spigot.....	May 28	36	5	None in 1 or 50 c.c.	Bad—
Acton lane, Annapolis, pump.....	May 28	16	4	None in 1 or 50 c.c.	Too many bacteria
Notre Dame, sent in by Dr. Robins, spring	June 9	3000	15	None in 1 or 50 c.c.	Good
Pump station, Embla Park	June 9	25	5	Present in 1 and 50 c.c.	Bad—
					Too many bacteria

TABLE No. 3—CONTINUED.

TAP, STREAM, WELL OR SPRING.	Date.	Colonies Per c.c.		Colon Bacillus.	Quality.
		Aerobic.	Anaerobic.		
Water tower, Embla Park supply.....	June 9	600	40	Present in 1 and 50 c.c.	Bad
Notre Dame, Embla Park supply.....	June 9	100	10	Present in 1 and 50 c.c.	Bad
T. W. Byerly, M.D., Laurel, No. 1, well.....	June 13	1200	250	None in 1 or 50 c.c.	Suspicious— Too many bacteria
T. W. Byerly, M.D., Laurel, No. 2, well.....	June 13	1000	400	Present in 50 c.c.	Bad
T. W. Byerly, M.D., Laurel, No. 3, hydrant	June 13	40	40	Present in 1 and 50 c.c.	Bad
A. F. VanBibber, M.D., Belair, well.....	June 23	5000	2400	None in 1 or 50 c.c.	Bad— Too many bacteria
A. F. VanBibber, M.D., Belair, spring.....	June 23	150	150	Present in 50 c.c.	Bad
C. R. Scheller, M.D., Hagerstown, well.....	June 29	40	4	Present in 1 c.c.	Bad
C. R. Scheller, M.D., Hagerstown, spigot.....	June 29	6	5	Present in 1 c.c.	Bad
Elliott & Myers, Hagerstown, spigot.....	June 29	50	8	Present in 1 and 50 c.c.	Bad
West Washington street, Hagerstown.....	June 29	5	4	None in 1 or 50 c.c.	Good
Prospect street, Hagerstown, spigot.....	June 29	70	8	Present in 1 c.c.	Bad
Hess, Tuxedo, spigot.....	July 7	600	100	None in 1 or 50 c.c.	Fair
Hebden, Tuxedo.....	July 7	1200	0	None in 1 or 50 c.c.	Fair
Neudecker, Tuxedo, brought in by Dr. Robins	July 7	600	0	None in 1 or 50 c.c.	Fair
Hurlbutt, Embla, Dr. Robins.....	July 7	10	5	None in 1 or 50 c.c.	Good
Pump station, Embla.....	July 7	10	10	None in 1 or 50 c.c.	Good
Elevated tank, Embla.....	July 7	4800	.....	None in 1 or 50 c.c.	Fair— Too many bacteria
Notre Dame.....	July 7	3000	1	None in 1 or 50 c.c.	Fair— Too many bacteria
Dr. F. P. Smithson, Forest Hill, No. 1, well	July 14	40	2	None in 1 or 50 c.c.	Good
Dr. F. P. Smithson, Forest Hill, No. 2, spring	July 14	300	0	None in 1 or 50 c.c.	Good
Dr. F. P. Smithson, Forest Hill, No. 3, spring	July 14	50	5	None in 1 or 50 c.c.	Good

Dr. F. P. Smithson, Forest Hill, No. 4, well	July 14	200	5	None in 1 or 50 c.c.	Good
Hazel W. Cashell, Lay Hill, well	July 29	3000	240	None in 1 or 50 c.c.	Fair
Wm. P. Beall, Lay Hill P. O., well	July 29	450	60	None in 1 or 50 c.c.	Good
Frank Watkins, Lay Hill P. O., well	July 29	2400	2	None in 1 or 50 c.c.	Fair
Oliver Van Horn, Lay Hill P. O., well	July 29	720	360	None in 1 or 50 c.c.	Good
Rigby Hotel, Betterton, spring	Aug. 1	Liquefied	0	Present in 1 c.c.	Bad
Chesapeake House, Betterton, spring	Aug. 1	Liquefied	0	None in 1 or 50 c.c.	Good
Betterton House, Betterton, pump	Aug. 1	Liquefied	24	Present in 1 c.c.	Bad
Rigby Hotel, Betterton, pump	Aug. 1	Liquefied	0	None in 1 or 50 c.c.	Good
Henry Langel, Cambridge, pump	Aug. 6	6000	438	Present in 1 and 50 c.c.	Bad
Mary Cannon, Cambridge, pump	Aug. 6	6736	606	Present in 50 c.c.	Bad
Mrs. Morton Hughes, Cambridge, pump	Aug. 6	1686	510	None in 1 or 50 c.c.	Suspicious— Too many bacteria
Will Trego, Cambridge, pump	Aug. 6	1818	132	None in 1 or 50 c.c.	Suspicious— Too many bacteria
Barcum Salisbury, Cambridge, pump	Aug. 6	2160	270	Present in 1 and 50 c.c.	Bad
Mr. J. S. B. Hubbard, Cambridge, pump	Aug. 6	3450	234	None in 1 or 50 c.c.	Bad— Too many bacteria
Tom Trego, Cambridge, pump	Aug. 6	2040	330	Tubes destroyed	Bad— Too many bacteria
Town water supply, Cambridge, artesian well	Aug. 6	12000	35	Tubes destroyed	Bad— Too many bacteria
Charles W. Reese, Westminster, spigot	Aug. 13	3000	0	None in 1 or 50 c.c.	Fair
Charles W. Reese, Westminster, well	Aug. 13	600	0	None in 1 or 50 c.c.	Fair
Charles W. Reese, Westminster, well	Aug. 13	150	0	None in 1 or 50 c.c.	Fair
Mr. Wm. Winchester, country-place, pump	Aug. 13	450	0	None in 1 or 50 c.c.	Good
Mr. Wm. Winchester, country-place, spring	Aug. 13	80	0	None in 1 or 50 c.c.	Good
Mr. Julian G. McShane	Aug. 20	320	0	None in 1 or 50 c.c.	Good
Guy W. Latimer, M.D., West River, No. 1, well	Aug. 22	1600	186	Present in 1 c.c.	Bad
Guy W. Latimer, M.D., West River, No. 2, spring	Aug. 22	3600	60	None in 1 or 50 c.c.	Bad— Too many bacteria

TABLE No. 3—CONTINUED.

TAP, STREAM, WELL OR SPRING.	Date.	Colonies Per c.c.		Colon Bacillus.	Quality.
		Aerobic.	Anaerobic.		
Guy W. Latimer, M.D., West River, No. 3, well	Aug. 22	3960	108	None in 1 or 50 c.c.	Bad— Too many bacteria
Guy W. Latimer, M.D., West River, No. 4, well	Aug. 22	1380	1320	Present in 1 and 50 c.c.	Bad
Jacob Jenkins, Gamber, Md., well.....	Aug. 31	600	420	Present in 1 and 50 c.c.	Bad
Mrs W. H. Stocksdale, Gamber, well.....	Aug. 31	Liquefied	1090	Present in 50 c.c.	Bad
John Harry, Gamber, well.....	Aug. 31	1140	720	Present in 1 c.c.	Bad
Wm. Barnes, Gamber, well.....	Aug. 31	1380	480	None in 1 or 50 c.c.	Bad— Too many bacteria
Maurice Gorsuch, Gamber, well.....	Aug. 31	1860	0	Present in 1 c.c.	Bad
Joshua Peeling, Westminster, well.....	Aug. 31	2730	300	None in 1 or 50 c.c.	Suspicious— Too many bacteria
J. B. Ford, Gamber, well.....	Aug. 31	Liquefied	36	Present in 1 and 50 c.c.	Bad
Frank Stocksdale, Finksburg, well.....	Aug. 31	1080	.....	Present in 50 c.c.	Bad
Ruxton M. Ridgely, Liberty road, well.	Aug. 26	720	24	Present in 1 c.c.	Bad
Robert D Hopkins, country-place, well.....	Aug. 27	480	60	None in 1 or 50 c.c.	Good
F. C. Dezendorf, Laurel, well.....	Aug. 27	1200	30	None in 1 or 50 c.c.	Fair
Walter Dodd, Laurel, well.....	Aug. 27	4800	48	None in 1 or 50 c.c.	Suspicious— Too many bacteria
Walter Marten, Laurel, well.....	Aug. 27	2400	300	None in 1 or 50 c.c.	Fair
George Miller, Laurel, well.....	Aug. 27	420	0	None in 1 or 50 c.c.	Good
Thomas Cronmiller, Laurel, well.....	Aug. 27	1800	0	None in 1 or 50 c.c.	Fair
Elwood Fisher, Laurel, well.....	Aug. 27	1800	600	None in 1 or 50 c.c.	Fair
George Waters, Laurel, well.	Aug. 27	2400	600	None in 1 or 50 c.c.	Fair
Wesley Burley, Laurel, well.....	Aug. 27	1380	10	None in 1 or 50 c.c.	Fair

L. Page Cronmiller, Laurel, well	Aug. 27	240	240	None in 1 or 50 c.c.	Good
T. W. Beyerly, M.D., Laurel, spigot.....	Aug. 27	180	10	None in 1 or 50 c.c.	Good
Snow Hill, No. 1	Aug. 28	.....	.....	None in 1 or 50 c.c.	Good
Snow Hill, No. 2	Aug. 28	.....	.....	None in 1 or 50 c.c.	Good
Thompson avenue, Emory Grove, pump.....	Aug. 30	10	0	Present in 1 and 50 c.c.	Bad
Pump back of Thompson ave., Emory Grove Aug. 30	Aug. 30	3	2	None in 1 or 50 c.c.	Good
Pierce's pump, Emory Grove.....	Aug. 30	3	3	None in 1 or 50 c.c.	Good
Robert avenue pump, Emory Grove.....	Aug. 30	4	0	None in 1 or 50 c.c.	Good
Horse pound pump, Emory Grove.....	Aug. 30	8	2	None in 1 or 50 c.c.	Good
Minnehaha pump, Emory Grove.....	Aug. 30	0	0	None in 1 or 50 c.c.	Good
Fallows, 807 Roland avenue.....	Sep. 16	2	0	None in 1 or 50 c.c.	Good
Md Central Dairy, Tuxedo, artesian well...	Sep. 16	4	0	Present in 1 and 50 c.c.	Bad
Md. Central Dairy, Embla Park supply.....	Sep. 16	0	0	None in 1 or 50 c.c.	Good
F. C. Cole, Gladstone avenue, pump	Sep. 16	5	0	None in 1 or 50 c.c.	Good
F. C. Cole, Gladstone avenue, artesian well. Sep. 16	Sep. 16	2400	750	None in 1 or 50 c.c.	Bad— Too many bacteria
Dr. C. R. Scheller, Hagerstown.....	Sep. 16	0	0	None in 1 or 50 c.c.	Good
Elliott & Myers, Hagerstown	Sep. 16	4	0	Present in 1 c.c.	Bad
Miss Jane Stouffer, Hagerstown.....	Sep. 16	7	0	None in 1 or 50 c.c.	Good
Judge Alvey, Hagerstown, Prospect street..	Sep. 16	5	0	None in 1 or 50 c.c.	Good
Judge Alvey's cistern, Hagerstown.....	Sep. 16	500	0	None in 1 or 50 c.c.	Good
D. H. Staley's, Hagerstown.....	Sep. 16	240	0	None in 1 or 50 c.c.	Good
Dr. C. W. Baldwin, Millersville, No. 1.....	Sep. 21	5	5	None in 1 or 50 c.c.	Good
Dr. C. W. Baldwin, Millersville, No. 2.....	Sep. 21	3	4	None in 1 or 50 c.c.	Good
Public spring, Clearspring.....	Sep. 21	20	5	Present in 1 c.c.	Bad
Potomac Hotel, Clearspring, well.....	Sep. 24	6	1	None in 1 or 50 c.c.	Good
Public spring pipe, Clearspring.....	Sep. 24	25	10	Present in 1 and 50 c.c.	Bad
Public well, Clearspring.....	Sep. 24	3	5	None in 1 or 50 c.c.	Good
Reitzell's public well, Clearspring.....	Sep. 24	10	4	Present in 1 c.c.	Bad
Snyder's public well, Clearspring.....	Sep. 24	180	20	None in 1 or 50 c.c.	Good
Dr. J. A. Luetscher, Ocean City, No. 1.....	Oct. 6	2	0	None in 1 or 50 c.c.	Good
Dr. J. A. Luetscher, Ocean City, No. 2.....	Oct. 6	1	5	None in 1 or 50 c.c.	Good
Dr. J. A. Luetscher, Ocean City, No. 3.....	Oct. 6	2	0	None in 1 or 50 c.c.	Good
Dr. J. A. Luetscher, Ocean City, No. 4.....	Oct. 6	10	25	None in 1 or 50 c.c.	Good

TABLE NO. 3—CONTINUED.

TAP, STREAM, WELL OR SPRING.	Date.	Colonies Per c.c.		Colon Bacillus.	Quality.
		Aerobic.	Anaerobic.		
Dr. J. A. Luetscher, Ocean City, No. 5.....	Oct. 6	120	300	None in 1 or 50 c.c.	Good
Dr. J. A. Luetscher, Ocean City, No. 6.....	Oct. 6	12	25	None in 1 or 50 c.c.	Good
Dr. J. A. Luetscher, Ocean City, No. 7.....	Oct. 6	1	20	None in 1 or 50 c.c.	Good
Dr. J. A. Luetscher, Ocean City, No. 8.....	Oct. 6	10	1	None in 1 or 50 c.c.	Good
Dr. J. A. Luetscher, Ocean City, No. 9.....	Oct. 6	900	20	None in 1 or 50 c.c.	Good
C. Heurich, Bellevue Farm, near Riverdale, No. 1.....	Oct. 6	0	0	None in 1 or 50 c.c.	Good
C. Heurich, Bellevue Farm, near Riverdale, No. 2.....	Oct. 6	7200	1500	Present in 1 and 50 c.c.	Good
C. Heurich, Bellevue Farm, near Riverdale, No. 3.....	Oct. 6	600	250	Present in 1 and 50 c.c.	Good
Mrs. Kate E. Dunbar, Ridge, St. Mary's Co.	Oct. 12	1200	350	None in 1 or 50 c.c.	Bad— Too many bacteria
Union Bridge College, well.....	Oct. 29	3000	1000	None in 1 or 50 c.c.	Suspicious— Too many bacteria
J. C. Clark, Sykesville, No. 1, stream.....	Nov. 7	160	10	Present in 50 c.c.	Bad
J. C. Clark, Sykesville, No. 2, well.....	Nov. 7	5	0	None in 1 or 50 c.c.	Good
J. C. Clark, Sykesville, No. 3, spring.....	Nov. 7	50	0	None in 1 or 50 c.c.	Good
Wm. Harris, Sykesville, well.....	Nov. 14	360	90	None in 1 or 50 c.c.	Good
A. P. Gordon-Cumming, Freedom, well.....	Nov. 14	5000	450	None in 1 or 50 c.c.	Suspicious— Too many bacteria
Basil Dorsey, Berrett, well.....	Nov. 14	3600	120	None in 1 or 50 c.c.	Suspicious— Too many bacteria
Unfiltered—Dr. Stokes.....	Nov. 14	1200	350	Present in 1 and 50 c.c.	Bad
National Park Seminary, Forest Glen, deep well.....	Nov. 23	5	4	None in 1 or 50 c.c.	Good

National Park Seminary, Forest Glen, bath-room.....	Nov. 23	600	150	None in 1 or 50 c.c.	Good
National Park Seminary, Forest Glen, well 74 ft. deep.....	Nov. 23	300	450	None in 1 or 50 c.c.	Good
National Park Seminary, Forest Glen, spring	Nov. 23	90	15	None in 1 or 50 c.c.	Good
S. H. Blakely, Owings Mills, well.....	Nov. 23	600	20	None in 1 or 50 c.c.	Good
Captain John M. Winks, near Carney P. O. well.....	Dec. 7	240	0	None in 1 or 50 c.c.	Good
Reuben Haines, Elkton, well	Dec. 14	450	120	A typical form present in 1 and 50 c.c.	Suspicious
Town supply of Elkton, spigot.....	Dec. 14	60	2	None in 1 or 50 c.c.	Good

Respectfully submitted,

WM. ROYAL STOKES, M.D.,
Bacteriologist to the State Board of Health.

CLERICAL REPORT.

Number of letters (regular correspondence)	1792
Number of circular letters..	4229
Number of birth certificates filed..	9373
Number of death certificates filed.	8567
Sent vouchers to 53 local registrars for the registration of births and deaths for the quarters ending December 31, 1902, March 31, 1903, June 30, 1903, September 30, 1903.	

Respectfully submitted,

M. L. RULLMAN, *Clerk.*

TYPHOID FEVER.

SOME UNCONSIDERED HINDRANCES IN ITS PROPHYLAXIS.*

JOHN S. FULTON, M.D., BALTIMORE, MD.

For fifty years we have known that drinking water is the chief vehicle of typhoid infection, and this knowledge has enabled great cities to make measurably effective defense against typhoid fever. For more than twenty years it has been known that the whole problem of preventing typhoid fever lay in the disposal of typhoid dejecta. Knowing so much, it would seem that typhoid fever might have long since been reduced to insignificance as a cause of death. But the bad eminence of the disease is as conspicuous to-day as it was twenty years ago.

In the gruesome story of typhoid among the United States troops during the Spanish-American war we were confronted by a fact so humiliating that the profession has not yet had courage to consider fully its great significance. We learned that of every one hundred cases of typhoid fever sent to division hospitals one-half had escaped the diagnosis of regimental surgeons. This enormous defect of professional skill was exposed, not by typhoid in its rarer and more subtle disguises, nor by the very mild infections, but by plain, uncomplicated typhoid fever, which puts a man to bed for three to six weeks; such typhoid as all physicians see year after year and recognize five or six times in ten. Restrictive measures can avail us little if the enemy can maintain effective disguise while fully armed and accoutred. The failure of definite and effective means to restrict the prevalence of typhoid fever is chargeable primarily against American medical schools, which do not teach young men to recognize the commonest continued fever of the United States.

Before the fight against typhoid fever can become hopeful one barrier must be levelled: a ponderous inertia which American medical education has imposed on the medical

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mind in respect to one disease. Until we are relieved of the dead weight of authority, the thralldom of the textbook, we shall go on misinterpreting, in forty per cent. of instances, the clinical phenomena of typhoid infection. While dogmatic teaching is rapidly giving way to natural methods of study, there is in the portfolio of many a professor of medicine one lecture, or a set of lectures, which will be given up with great reluctance. The subject is typhoid fever, and the vivid descriptions so impress the students that they ever after require each case of typhoid to be as good as the description, to wear all its insignia, and to proclaim aloud its full name with decorations and titles. The prophylaxis of typhoid fever would gain an impetus from the conflagration of all such literature. Typhoid fever is taught too much, it is studied too little. This defect of medical education has no preferred habitat within the confines of America. The glaring delinquency of Army medical men owed little to the latitudes in which it was demonstrated. These observers came from all parts of the land, and brought with them such light as their previous training and professional associations afforded. The men who entered the Army medical service in the late war were not more delinquent than those who remained in civil practice. There is a broad humor in Carroll's story of a solitary regimental surgeon who had no malaria among his fifty fever patients. He had a foreign accent, and had not acquired the American delusion that malaria is a considerable contributor to the mortality of the country.

In 1898 the Special Commission on Typhoid in the United States Army Encampments testified that no fatal malarial infections occurred to the soldiers in any part of the United States. In 1900 the profession of this country testified through the Census Bureau that for every seven persons who died of typhoid fever, three others died of malaria. In the south Mississippi belt the testimony is that twice as many deaths occurred from malaria as from typhoid. Among the twenty-one geographical divisions* of the country this one,

*These Grand Groups do not respect State boundaries, but physical characteristics, as may be understood from their designations as follows:

the south Mississippi belt, showed the largest error in numbers, but a worse error was that of the central Appalachian region, where malaria is not even a considerable cause of disability, but where, nevertheless, it was charged with one death for every ten charged to typhoid.

I have plotted for each of the twenty-one grand groups the mortality returns of both typhoid and malaria by months, and the seasonal curve itself points a suspicion that confusion between the two diseases is everywhere more or less prevalent. Indeed, the charts show the malaria curve below, obedient to the typhoid curve above, as faithfully as the shores are reflected by the surface of a lake. The seasonal apex for the two diseases coincides in ten of the twenty-one groups, five times in August, once in September, four times in October. In eight groups the apex of the reported malaria mortality anticipates the typhoid apex by one month. In the whole Appalachian region, which runs from northern New York to within 200 miles of the Gulf coast of Alabama, the malaria is a midsummer madness, the apex being reached in July.

In the mid-Atlantic coast region, which includes parts of New York, New Jersey, Delaware, Maryland and Virginia and the whole of the District of Columbia, the Census figures show the typhoid fever and malaria mortalities in a ratio of

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|-------------|---|
| Grand Group | 1. North Atlantic Coast Region. |
| Grand Group | 2. Middle Atlantic Coast Region. |
| Grand Group | 3. South Atlantic Coast Region. |
| Grand Group | 4. Gulf Coast Region. |
| Grand Group | 5. Northern Hills and Plateaus. |
| Grand Group | 6. Central Appalachian Region. |
| Grand Group | 7. The Great Northern Lakes. |
| Grand Group | 8. Interior Plateau. |
| Grand Group | 9. South Central Appalachian Region. |
| Grand Group | 10. Ohio River Belt. |
| Grand Group | 11. South Interior Plateau. |
| Grand Group | 12. South Mississippi River Belt. |
| Grand Group | 13. North Mississippi River Belt. |
| Grand Group | 14. Southwest Central Region. |
| Grand Group | 15. Central Plains and Prairies. |
| Grand Group | 16. The Prairie Region. |
| Grand Group | 17. Missouri River Belt. |
| Grand Group | 18. Western Plains. |
| Grand Group | 19. Heavily Timbered Region of the Northwest. |
| Grand Group | 20. Cordilleran Region. |
| Grand Group | 21. Pacific Coast Region. |

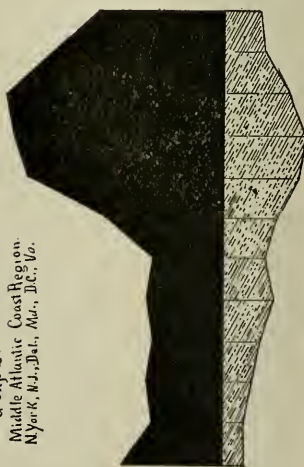
Group 1.

North Atlantic Coast Region
Maine, Mass., N.H., R.I., Conn.



Group 2.

Middle Atlantic Coast Region
N.Y., N.J., Del., Md., D.C., Va.



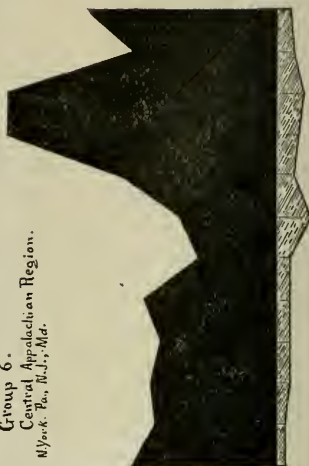
Group 5.

North-eastern Hills and Plateaus.
Maine, N. Hamp., Mass., Vermont, Conn., N. York



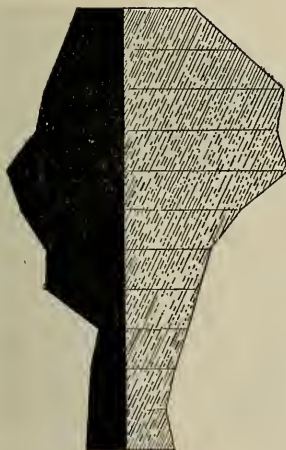
Group 6.

Central Appalachian Region.
N.Y., N. C., Pa., N.J., Md.



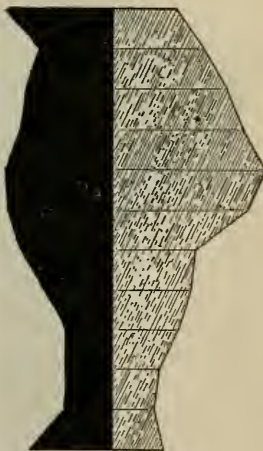
Group 3.

South Atlantic Coast Region.
Maryland, S. Carolina, Georgia.



Group 4.

Gulf Coast Region.
Florida, Alabama, Miss., La., Texas.



Group 7

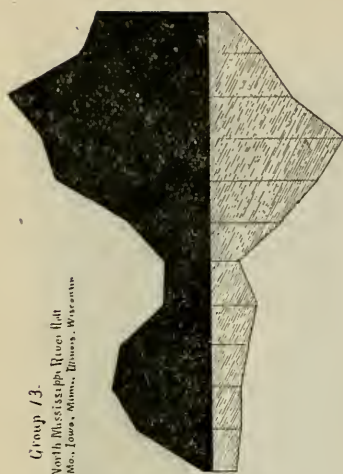
Region of the Great Northern Lakes
N. York, Ohio, Ind., Ill., Mich., Wis.



Group 8

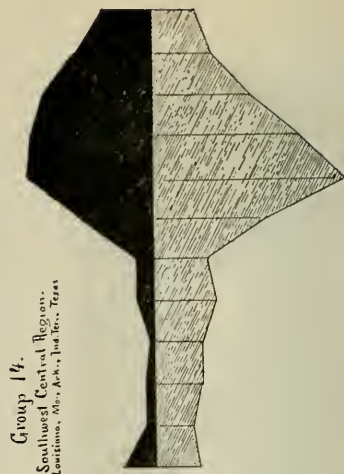
The Interior Plateau
Pennsylvania, Va., N. Car., N. York





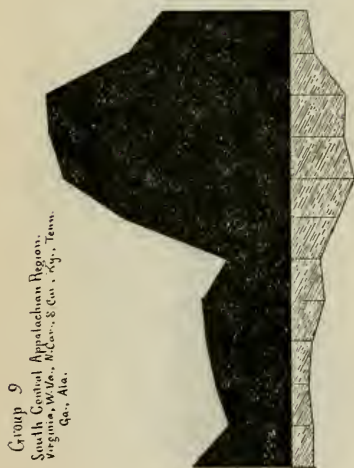
Group 13.

North Mississippi River flat.
Mo., Iowa, Minn., Wis., Ill., Wyo., W. Va.



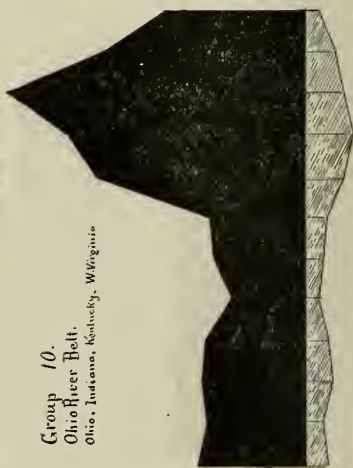
Group 14.

Southwest Central Region.
Louisiana, Ark., Ind. Terr., Tex.



Group 9.

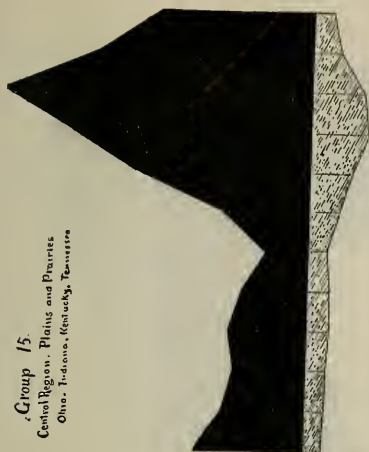
South Central Appalachian Region.
Virginia, W. Va., N. Car., S. Car., Ky., Tenn., Ga., Ala.



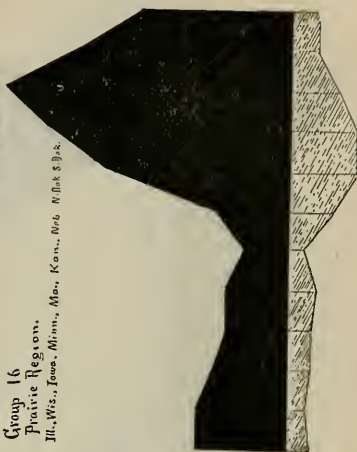
Group 10.

Ohio River Belt.
Ohio, Indiana, Kentucky, West Virginia

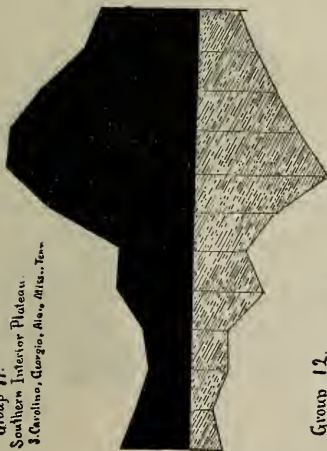
Group 15.
Central Region. Plains and Prairies
Ohio, Indiana, Kentucky, Tennessee



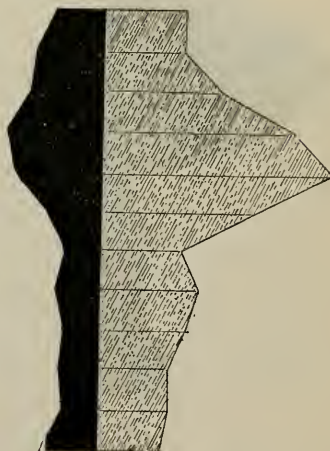
Group 16
Prairie Region.
Ill., Wis., Iowa, Minn., Mo., Kans., Neb. N.Dak. S.Dak.

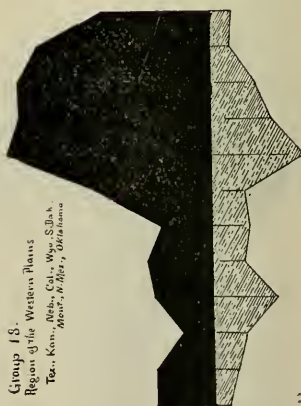
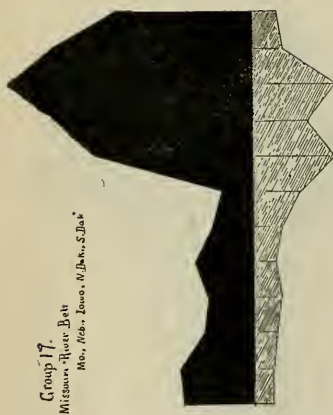
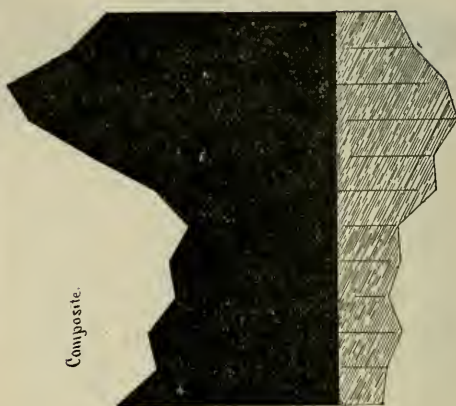


Group 11.
Southern Interior Plateau.
S. Carolina, Georgia, Ala., Miss., Tex.

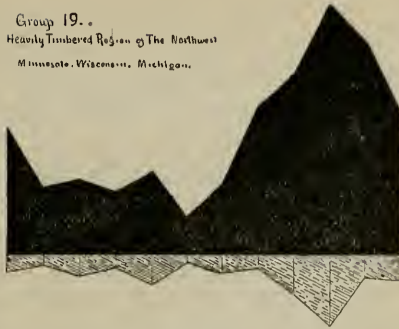


Group 12.
South Mississippi River Belt
Ky., Tenn., Ark., Miss., La.

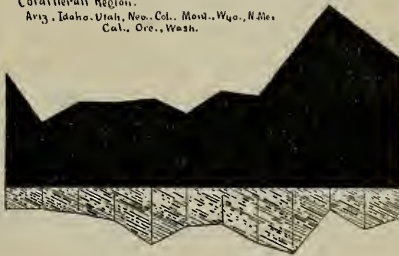




Group 19.
Heavily Timbered Region of The Northwest
Minnesota, Wisconsin, Michigan.



Group 20.
Cordilleran Region.
Ariz., Idaho, Utah, Nev., Col., Mont., Wyo., N. Mex.
Cal., Ore., Wash.



72 to 28. The Delaware State Board of Health recently made an extended study of the subject by modern methods, and concluded that practically all the remittent and continued malarial fevers were in fact typhoid. None of them was malarial. In Maryland, where examinations of blood for the malarial parasite have been made for four years, the parasite has been found in but 5 per cent. of all the specimens submitted. My personal belief is that fatal malarial intoxication does not happen to one citizen a year in Maryland, though malaria is in some parts of the State a considerable cause of disability.

Of all the mortality charged in the South to malaria, half, perhaps, is really due to typhoid fever. The United States Army's experience would indicate that much more than half is due in fact to typhoid, and certainly more than 50 per cent. of the mortality so charged is not due

to malaria. In the North a much larger part, probably two-thirds of the reputed malarial mortality, represents unrecognized typhoid. Osler said long ago that north of the Mason-Dixon line every continued fever not yielding to quinine in six or seven days should be considered typhoid until definitely ascertained to be something else. I am led to believe that this mental attitude toward continued fevers is as becoming to medical men in the South as to those north of the Mason-Dixon line. Outside of certain well-known areas malaria does not kill citizens of the United States, and within those areas, where malaria is a cause of grave sickness, its right to be considered an important cause of death has not been subjected to the rigid scrutiny which its apparent importance demands. Speaking for that part of the United States which I know best, I can say that the terms "malarial" and "typhomalarial" express no definite belief as to the cause or character of a disease, but are applied to fevers of indeterminate nature, in the same way that some fourteen other titles found in the United States Census Reports are used—simply for want of a more satisfactory word.

To the large deficiency in the typhoid mortality which is fairly ascribable to the malaria delusion, one must add a further correction for the missed diagnosis of typhoid at the extremes of life. The accepted view that typhoid is unusual after middle life is not at present undergoing revision, so far as I know. But with respect to children the conviction is gradually settling in the minds of pediatricists that typhoid is common in childhood. At a recent meeting of the New York Academy of Medicine, J. P. Crozer Griffith remarked on the steady change of medical opinion on this point. He said that in the Children's Hospital of Philadelphia the cases of typhoid constantly outnumber those of any other single disease, and that the superabundance of typhoid is often a cause of embarrassment in the instruction of students. New York pediatricists remarked that they seldom see typhoid fever in children, but that the children of the metropolis often suffer with an obscure fever, which, for want of a better name, a distinguished clinician called "New York" fever. This circumstance reminds one of the fever that recurred year after year in a certain American city, and which, for want of a

better name, was called "Ithaca fever." When to these sources of error in the diagnosis of typhoid fever the ambulant and anomalous cases are added, the total default in diagnosis is seen to amount to at least 50 per cent. of cases actually occurring. So long as we deceive ourselves thus grossly as to the amount of typhoid fever prevailing, we are not in a position to profit largely by our knowledge of its prevention.

But there is another important point on which, if not deceived, we are only half informed; namely, as to the preferred habitat of typhoid fever. The belief that typhoid fever is more common in close communities, and that its incidence is heaviest on cities, has its place in the medical mind by a sort of common consent. The grounds of the belief have not been examined, if, indeed, they have been stated. The late Colonel George Waring said in 1878: "Typhoid is peculiarly a disease of the country rather than of the town." No similar statement, I believe, is made by any American medical author; but the opposite view, that typhoid is peculiarly a disease of cities, is expressed in the most recent editions of at least four American text-books on medicine. Typhoid fever makes its most striking demonstrations in cities, and the definite influence of sanitary works on its prevalence has made the typhoid rate the accepted index of municipal hygiene. Typhoid fever has, nevertheless, at the present time and in this country, a heavier incidence on small communities and rural districts, and probably this has been the case for a long time; for sanitary works have neither such excellence nor so wide employment in American cities as to give urban populations in general good defenses against typhoid. On the contrary, the conditions of American cities with respect to water supply and disposal of waste might be expected to produce a constantly higher typhoid mortality than is experienced under rural conditions.

The returns of the Twelfth Census show that the typhoid mortality per 100,000 of population in the registration area was slightly higher in the rural districts than in the cities (25.5 to 25.3). The "registration area" contains, however, but one-third of the total population of the country, and

comprises the populations of 341 cities of 8,000 inhabitants and upward. But a small part of the aggregate population of the registration area is, therefore, classed as rural.

When we examine the rank of typhoid fever among all the causes of death we find that rural typhoid fever is credited with 62 in every 1,000 deaths, as against 38 per 1,000 for urban typhoid.

Taking the 21 grand groups into which the Census Office divides the country on a basis of physiography, and arranging them according to population density, one finds that the typhoid mortality rises as population density falls until we reach the low density of 50 persons per square mile. Below this point the relations of typhoid are, as might be expected, quite irregular.

The Census divides the United States into five grand divisions, which, arranged in the order of their rural population, are as follows: The south central division having 88.9 per cent. of its total population rural, and a typhoid mortality of 79 per 100,000; south Atlantic division having a population of 83 per cent. rural, and a typhoid mortality of 62 per 100,000; western division, population 68.8 per cent. rural, typhoid mortality of 33 per 100,000; north central division, population 59.4 per cent. rural, typhoid mortality of 42 per 100,000; north Atlantic division, population 41 per cent. rural, typhoid mortality of 30 per 100,000. Here we find the typhoid mortality rising as the urban population falls.

Some doubt may be admitted as to whether these grand divisions can fairly be compared. If the United States be divided into State groups on the basis of the distribution of population between town and country, we can eliminate to a great extent the influence of latitude and longitude.

Thus there are five States whose rural populations are under 30 per cent. of the totals. They are Massachusetts, New York, Rhode Island, New Jersey and the District of Columbia. Their aggregate population is 12,665,183, of which number 70 per cent. are classed as urban, i. e., live in towns of 8,000 or over. Their combined typhoid mortality is 25 per 100,000. (See Table I.)

Six States have populations between 40 and 50 per cent. rural—Connecticut, Pennsylvania, Delaware, Maryland, Illi-

nois and California. In these the total population is 50 per cent. urban, and the typhoid mortality for 1900 was 42 per 100,000.

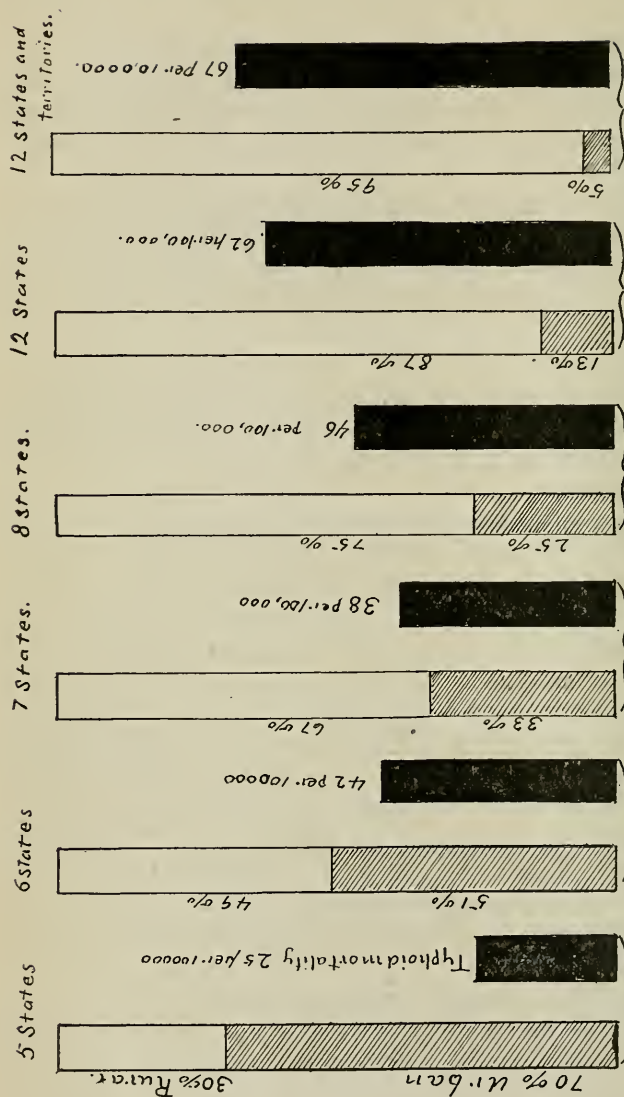
Seven States have populations between 50 and 60 per cent. rural—New Hampshire, Ohio, Michigan, Wisconsin, Missouri, Colorado, Washington. Their population is 43 per cent. urban, and their typhoid mortality in 1900 was 38 per 100,000.

Eight States have populations between 60 and 70 per cent. urban—Maine, Indiana, Minnesota, Louisiana, Montana, Wyoming, Utah, Oregon. Their population is 25 per cent. urban, and their typhoid mortality in 1900 was 46 per 100,000.

Twelve States have populations between 70 and 80 per cent. rural—Vermont, Virginia, South Carolina, Georgia, Florida, Tennessee, Alabama, Texas. Their population is 13 per cent. urban, and their typhoid mortality in 1900 was 62 per 100,000.

Twelve States have populations more than 80 per cent. rural—West Virginia, North Carolina, North Dakota, Mississippi, Indian Territory, Oklahoma, Arkansas, New Mexico, Arizona, Nevada, Idaho. Their population is 5 per cent. urban, and their typhoid mortality in 1900 was 67 per 100,000. Taking the twenty-one grand groups into which the country is divided on a basis of physiography, and arranging them according to their population density one finds that the typhoid mortality rises as population density decreases, until we reach a population density of 50 persons per square mile. Below that point the relations of typhoid to population density are, as might be expected, quite irregular. (See Table II.)

The experience of Maryland supports the general indications of these figures. There is but one large city in the State. The inhabitants of Baltimore are half of the total population of the State. There are but two other towns having as many as 8,000 inhabitants. It may be fairly said that the population of the State is equally divided between rural and urban conditions. The ratio of typhoid mortality is 1 to 2.5 in favor of Baltimore, a poorly-sewered city, supplied with unfiltered water from an extensive and unprotected water-shed.



The States classified on a descending scale of population density. Showing typhoid mortality increasing as rural conditions more and more prevail. White columns indicate rural population; shaded columns urban population; black columns indicate typhoid mortality.

3 Cities		Average Population 2,143,158. Typhoid Mortality 24 per 100,000
3 Cities		Av. Pop. 565,029 Ty. Mort. 32.
6 Cities		* Av. Pop. 344,891 Ty Mort. 57.1
8 Cities		o Av. Pop. 249,095 Ty. Mort. 41
18 Cities		Av. Pop. 128,281 T. M. 37.7
15 Cities		Av. Pop. 83,692 T. M. 44.7.
25 Cities		Av. Pop. 65,578. T. M. 38.8.
45 Cities		Av. Pop. 33,957 T. M. 45.5
60 Cities		Av. Pop. 18,205. T. M. 46.8.
119 Cities		Av. Pop. 12,625 T. M. 44.8.
Rural		7,779,180 people. 95% Rural. Typhoid Mortality 67 per 100,000.

* Includes Pittsburg with Ty. M. 147 per 100,000
Pittsburg omitted Typhoid rate is 37 per 100,000.

o Includes Washington, Ty Mort. 81 per 100,000.
Washington omitted, Ty Mort. 35 per 100,000.

Dividing the cities of this country into ten classes on a descending population scale, we find that the typhoid mortality rises somewhat as populations diminish. Thus the least mortality in 1900 (24 per 100,000) fell on the three cities having populations of more than 1,000,000—New York, Chicago and Philadelphia. Not one of these cities is watered or sewered in a thoroughly modern way. Indeed, one of them is notoriously bad in respect to water supply.

There are but three cities in the half-million class—Boston, Baltimore and St. Louis—whose combined mortality for 1900 was 32 per 100,000.

Next we have five cities—Cleveland, Buffalo, San Francisco, Cincinnati and Pittsburg—whose average population is 344,891, and whose combined typhoid mortality for 1900 was 57. In this group we have the banner city of the year in respect to typhoid mortality among populations of over 100,000, Pittsburg, with the large rate of 147 per 100,000. The combined mortality in this class, if Pittsburg were omitted, would be 37 per 100,000.

Next are eight cities with an average population of 249,094, and a typhoid mortality for 1900 of 41 per 100,000. The city of Washington, in this class, had a mortality of 81 per 100,090, adding six points to the combined mortality of the class.

In the next class are eighteen cities whose average population is 128,281, and whose typhoid mortality in 1900 was 37.7 per 100,000. The second city of the country in typhoid mortality among populations of over 100,000 is in this class, Allegheny, Pa.

In the next class are fifteen cities with populations averaging 83,692, and typhoid mortality for 1900 was 44.4 per 100,000.

The seventh class comprises twenty-five cities whose populations averaged 59,517 and had a typhoid mortality in 1900 of 38.8 per 100,000.

In the eighth class are forty-five cities having an average population of 33,957, and a typhoid mortality of 45.5 per 100,000.

In the next class are sixty cities having an average population of 18,205, whose combined typhoid mortality for 1900 was 46.8 per 100,000.

Finally, there are 119 cities whose populations average 12,629, and whose combined typhoid mortality for the year was 44.8 per 100,000.

The total population accounted for in this analysis of typhoid mortality is 20,922,886. The actual increase of typhoid mortality as the scale of population falls is probably greater than these tables indicate, for the States whose general mortality from typhoid is comparatively low are the chief contributors to the ninth and tenth classes, whose rates are highest.

The foregoing studies seem to warrant two conclusions, each having an important bearing on the general prophylaxis of typhoid fever. The first and more important is that the typhoid mortality reported in this country is not more (probably less) than 65 per cent. of the typhoid mortality actually occurring. Of the total morbidity from the disease a considerable part runs its course to recovery without coming under medical observation, and of the cases receiving professional care fully one-half are not recognized as typhoid fever. It therefore follows that the first step in the restriction of typhoid fever must fail for lack of diagnostic skill in the rank and file of the medical profession. The correction of this delinquency does not wait on improved methods of clinical or laboratory diagnosis, but on a general realization of the ubiquity and perennial activity of typhoid fever, and on the lumbering advance of reform in medical education.

A subsidiary conclusion from this part of the present study is that a very large majority of the deaths attributed to malaria are due to causes in which malaria does not even participate.

The second important conclusion, drawn from a study of the distribution of typhoid mortality, is that the infection is more heavily seeded in smaller communities, and that the propagation of the disease is in general from the country to the town, rather than from town to country. The explanation of this fact is probably found in the greater care given to the disposal of human excrement as communities grow more populous.

The prophylaxis of typhoid fever consists essentially in defense against excremental contamination, and precisely as the barriers are more or less remote from the sources of infection is the defense less or more effective. In this view of the prevention of typhoid fever it must appear that, notwithstanding the very great value of the defenses on which cities most rely, these defenses do not, and by their widest conceivable extension can not, satisfy the requirements of a rational prophylaxis of typhoid fever. In town and country alike the appointed time and place for intervention against the spread of typhoid fever is whenever and wherever a case of typhoid fever is recognized. Those outbreaks of typhoid which from time to time scandalize great cities and bring down wrath on the authorities, as a rule, have their origin in unremarked, unopposed, or perhaps lie coddled epidemics covering the countryside for miles around. To set up at the city gates expensive works for the purification of the public water supply as a main defense against water-borne disease is literally a preposterous arrangement. It waives the choice of time, place and weapons, conceding all these advantages to the enemy. It assumes that the vices of rural insanitation are invincible, but they are not. If there is one direction in which, more than another, the political influence of great cities should be exerted, it is to bring rural districts and small communities under legal obligation to render strict account of deaths and the causes of death, and to take and give good heed to the preventable diseases at the time and place of their occurrence.

TABLE I.

FIVE STATES WHOSE URBAN POPULATIONS ARE 60 PER CENT. AND UPWARDS.

	Population.	Urban.	Typhoid
Massachusetts.....	2,805,346	2,132,623	625
Rhode Island.....	428,556	347,892	102
New York	7,268,894	4,980,042	1,776
New Jersey	1,883,669	1,153,001	398
District of Columbia	278,718	278,718	225
	<hr/> 12,665,183	<hr/> 8,892,276	<hr/> 3,126

Rural population, 30 per cent. Typhoid per 100,000, 25.

SIX STATES WHOSE URBAN POPULATIONS ARE FROM 40 TO 60 PER CENT.

	Population.	Urban.	Typhoid.
Connecticut.....	908,420	483,068	249
Pennsylvania	6,302,115	2,865,937	2,779
Delaware	184,735	76,508	90
Maryland	1,188,044	557,497	510
Illinois	4,821,550	2,271,940	1,897
California.....	1,485,053	649,474	542
	<hr/> 14,889,917	<hr/> 7,593,424	<hr/> 6,067

Rural population, 49 per cent. Typhoid per 100,000, 42.

SEVEN STATES WHOSE POPULATIONS ARE FROM 30 TO 40 PER CENT URBAN.

	Population.	Urban.	Typhoid.
New Hampshire.....	411,588	158,920	69
Ohio	4,157,545	1,599,840	1,795
Michigan	2,420,982	747,334	680
Wisconsin	2,069,042	634,437	365
Missouri	3,106,665	955,563	1,790
Colorado.....	539,700	205,703	222
Washington.....	518,103	165,282	171
	<hr/> 13,223,625	<hr/> 4,467,079	<hr/> 5,092

Rural population, 67 per cent. Typhoid per 100,000, 38.

EIGHT STATES WHOSE POPULATIONS ARE FROM 20 TO 30 PER CENT URBAN.

	Population.	Urban.	Typhoid.
Maine	694,466	164,639	200
Indiana	2,516,462	607,834	1,496
Minnesota	1,751,394	470,046	386
Louisiana	1,381,625	314,386	1,077
Montana	243,329	65,623	42
Wyoming.	92,531	22,294	16
Utah.....	276,749	69,844	73
Oregon.....	413,536	98,807	106
	<hr/> 73,700,092	<hr/> 1,813,473	<hr/> 3,396

Rural population, 75 per cent. Typhoid per 100,000, 46.

TWELVE STATES WHOSE POPULATIONS ARE FROM 10 TO 20 PER CENT.
URBAN.

	Population.	Urban.	Typhoid.
Vermont.....	343,641	305,054	107
Virginia	1,854,184	1,582,489	914
South Carolina.....	1,340,316	1,240,146	970
Georgia.....	2,216,331	1,972,562	1,585
Florida	528,542	449,413	290
Iowa.....	2,231,852	1,857,128	549
Nebraska.....	1,066,300	897,575	260
Kansas.....	1,470,495	1,265,288	688
Kentucky.....	2,147,174	1,784,115	1,669
Tennessee	2,020,216	1,750,298	1,709
Alabama	1,828,697	1,694,991	1,713
Texas.....	3,048,710	2,704,848	2,014
	<hr/> 20,096,459	<hr/> 17,503,907	<hr/> 12,468

Rural population, 87 per cent. Typhoid per 100,000, 62.

TWELVE STATES AND TERRITORIES HAVING POPULATIONS LESS
THAN 10 PER CENT. URBAN.

	Population.	Urban.	Typhoid.
West Virginia.....	958,800	885,197	586
North Carolina.....	1,893,810	1,797,273	1,250
North Dakota.....	319,146	309,548	65
South Dakota.....	401,750	391,484	73
Mississippi.....	1,581,270	1,510,176	1,370
Indian Territory	392,060	392,060	321
Oklahoma	398,331	378,288	201
Arkansas.....	1,311,564	1,240,201	1,172
New Mexico	195,310	195,310	102
Arizona	122,931	122,931	41
Nevada	42,335	42,335	12
Idaho.....	161,772	161,772	37
	<hr/> 7,779,179	<hr/> 7,426,575	<hr/> 5,230

Rural population, 95 per cent. Typhoid per 100,000, 67.

TABLE II.

THE 21 GRAND GROUPS, ACCORDING TO THE TWELFTH CENSUS, SHOWING POPULATIONS, TYPHOID AND MALARIA MORTALITIES, WITH DENSITIES AND TYPHOID RATES.

Grand Group.	Typhoid Deaths.	Malarial Deaths.	Population.	Den. sity.	Typhoid Mor'y.
1.....	868	157	3,824,576	198.4	23
2.....	1,900	694	7,139,889	299.8	27
3.....	625	922	1,193,697	29.0	52
4.....	1,111	1,179	1,767,487	16.5	63
5.....	604	94	2,063,453	38.1	29
6.....	991	108	3,249,040	89.0	30
7.....	1,701	193	5,910,100	114.0	29
8.....	3,796	557	7,488,008	99.4	51
9.....	2,886	695	4,031,150	39.0	70
10.....	1,774	309	3,018,359	85.7	58
11.....	3,971	2,285	4,812,414	37.7	83
12.....	753	1,424	1,090,623	39.0	69
13.....	1,198	571	2,872,624	42.2	42
14.....	4,319	3,597	5,424,490	21.9	79
15.....	3,410	695	5,458,379	65.0	62
16.....	2,645	641	8,133,937	30.6	33
17.....	537	169	1,446,643	16.5	37
18.....	580	199	1,442,684	3.4	40
19.....	543	101	1,990,622	20.3	28
20.....	638	220	1,965,065	2.2	33
21.....	529	64	1,671,335	16.0	32

TABLE III.

Three hundred and one American cities classified on a descending scale of populations, showing typhoid mortality according to United States Census figures for each of ten classes:

CLASS I.

	Population.	Deaths from Typhoid.
Chicago.....	1,698,575	470
New York.....	3,437,202	594
Philadelphia.....	1,293,697	489
Totals.....	6,429,474	1,553
Average population, 2,143,158. Typhoid mortality per 100,000, 24.		

CLASS II.

	Population.	Deaths from Typhoid.
Boston.....	560,892	153
Baltimore.....	508,957	177
St. Louis.....	575,238	190
Totals.....	1,695,087	520
Average population, 565,029. Typhoid mortality per 100,000, 32.		

CLASS III.

	Population.	Deaths from Typhoid.
Cleveland	381,768	184
Buffalo	352,387	88
San Francisco.....	342,782	135
Cincinnati.....	325,902	106
Pittsburg*	321,616	474
Totals.....	1,724,455	987

Average population, 344,891. Typhoid mortality per 100,000, 57.

*Pittsburg being omitted, the typhoid mortality of the group is 37 per 100,000.

CLASS IV.—EIGHT CITIES.

	Population.	Deaths from Typhoid.
New Orleans	287,104	191
Detroit.....	285,704	54
Milwaukee.....	285,315	52
Washington, D. C.*.....	278,718	225
Newark, N. J.....	246,070	26
Jersey City	206,433	46
Louisville, Ky.....	204,731	150
Minneapolis.....	202,718	83
Totals.....	1,996,793	827

Average population, 249,094. Typhoid mortality per 100,000, 41.

*Washington being omitted, the typhoid mortality of the group is 35 per 100,000.

CLASS V.—EIGHTEEN CITIES.

	Population.	Deaths from Typhoid.
Providence	174,597	52
Indianapolis.....	169,164	77
Kansas City.....	163,752	67
Rochester	162,608	38
St. Paul.....	162,065	36
Denver.....	133,859	57
Toledo.....	131,822	53
Allegheny, Pa.....	129,896	134
Columbus, Ohio.....	125,560	68
Worcester, Mass.....	118,421	21
Syracuse, N. Y	108,374	25
Fall River.....	104,863	23
Los Angeles	102,320	47
New Haven.....	108,027	33
Paterson, N. J.....	105,171	31
St. Joseph, Mo.....	102,979	37
Scranton	102,026	30
Omaha	102,555	41
Totals.....	2,309,059	870

Average population, 128,281. Typhoid per 100,000, 37.7.

CLASS VI.—FIFTEEN CITIES.

	Population.	Deaths from Typhoid.
Albany.....	91,151	41
Richmond, Va.....	85,050	66
Dayton, Ohio.....	85,333	45
Seattle	80,671	31
Atlanta, Ga.....	89,872	98
Lowell, Mass.....	94,969	18
Cambridge, Mass.....	91,886	19
Portland, Ore.....	90,426	22
Grand Rapids, Mich.....	87,565	34
Hartford, Conn.....	79,850	45
Reading, Pa.....	78,961	35
Wilmington, Del.....	76,508	50
Camden, N. J.....	75,935	22
Trenton, N. J.....	73,307	25
Bridgeport, Conn.....	70,996	11
Totals.....	1,255,385	562

Average population, 83,692. Typhoid per 100,000, 44.7.

CLASS VII.—TWENTY-FIVE CITIES.

Total population	1,389,462
Average population.....	55,578
Total typhoid deaths.....	539
Typhoid mortality per 100,000.....	38.8

	Population.	Deaths from typhoid.
Oakland, Cal.....	66,960	22
Lynn, Mass.....	63,513	13
Lawrence, Mass.....	62,559	8
Springfield, Mass.....	62,059	18
New Bedford, Mass.....	62,442	16
Somerville, Mass.....	61,643	17
Elizabeth, N. J.....	52,130	5
Wilkesbarre, Pa.....	51,721	14
Erie, Pa.....	52,733	18
Harrisburg, Pa.....	50,167	20
Evansville, Ind.....	59,007	45
Charleston, S. C.....	55,807	70
Savannah, Ga.....	54,244	21
Manchester, N. H.....	56,987	6
Troy, N. Y.....	60,651	53
Utica, N. Y.....	56,383	3
Salt Lake, Utah.....	53,531	16
San Antonio, Texas.....	53,321	44
Duluth, Minn.....	52,969	23
Portland, Me.....	50,145	21
Hoboken, N. J.....	59,364	19
Yonkers, N. Y.....	47,931	6
Holyoke, Mass.....	45,712	13
Waterbury, Conn.....	45,859	21
Norfolk, Va.....	46,624	27
Totals.....	1,389,462	539

CLASS VIII.—FORTY-FIVE CITIES.

Total population	1,528,061
Average population.....	33,957
Total typhoid deaths.....	694
Typhoid mortality per 100,000.....	45.5

	Population.	Deaths from Typhoid.
Haverhill, Mass.....	37,175	4
McKeesport, Pa	34,227	15
Altoona, Pa.....	38,973	19
Spokane, Wash.....	36,848	19
Davenport, Iowa.....	35,254	23
Sioux City, Iowa	33,111	13
Johnstown, Pa.....	35,936	35
Elmira, N. Y.....	35,672	13
Chelsea, Mass.....	34,072	8
Springfield, Ill.....	34,159	19
Bayonne, N. J.....	32,722	5
Superior, Wis.....	31,091	19
Allentown, Pa.....	35,416	17
Salem, Mass.....	35,956	7
Youngstown, Ohio.....	44,885	51
Brockton, Mass.....	40,063	16
Binghamton, N. Y.....	39,647	13
Lancaster, Pa.....	41,459	23
Covington, Ky.....	42,938	17
Mobile, Ala.....	38,469	31
Wheeling, W. Va.....	38,878	26
Lincoln, Neb.....	40,169	14
Terre Haute, Ind.....	36,673	22
Saginaw, Mich.....	42,345	17
Tacoma, Wash.....	37,714	7
Fitchburg, Mass.....	31,531	6
Malden, Mass.....	33,664	5
Newton, Mass.....	33,587	7
Taunton, Mass.....	31,036	3
Auburn, N. Y.....	30,345	12
Schenectady, N. Y.....	31,683	10
Canton, Ohio.....	30,667	19
Pawtucket, R. I.....	39,231	7
Quincy, Mass.....	36,252	7
Sacramento, Cal.....	29,282	15
Woonsocket, R. I.....	28,204	6
New Castle, Pa.....	28,339	42
Jacksonville, Fla.	28,429	19
Easton, Pa.....	25,238	4
Newport, Ky.....	28,301	15

	Population.	Deaths from Typhoid.
Pueblo, Col	28,157	31
Passaic, N. J.....	27,777	10
Williamsport, Pa	28,757	11
Bay City, Mich.....	27,628	8
Gloucester, Mass	26,121	4
Totals.....	1,528,061	694

CLASS IX.—SIXTY CITIES.

Total population.....	1,092,281
Average population.....	18,205
Total typhoid deaths.....	544
Typhoid mortality per 100,000.....	49.8

	Population.	Deaths from Typhoid.
Norristown, Pa	22,265	9
Jamestown, N. Y.....	22,892	16
Muncie, Ind.....	20,942	10
Burlington, Iowa.....	23,201	14
Wilmington, N. C.....	20,976	10
Leavenworth, Kan.....	20,735	8
Wichita, Kan.....	24,671	14
New Brunswick, N. J.....	20,006	4
Jackson, Mich	25,180	16
Kalamazoo, Mich.....	24,404	7
Muskegon, Mich.....	20,818	4
Bangor, Me.....	21,850	13
Petersburg, Va	21,810	18
Cohoes, N. Y.....	23,910	35
Watertown, N. Y.....	21,696	18
Lafayette, Ind.....	18,116	6
Richmond, Ind.....	18,226	10
Ottumwa, Iowa.....	18,197	18
Northampton, Mass.....	18,643	6
Chicopee, Mass.....	19,167	9
Medford, Mass.....	18,244	7
Lynchburg, Va.....	18,891	17
Key West, Fla.....	17,114	7
Paducah, Ky	19,446	31
Lebanon, Pa.....	17,628	8
Eau Claire, Wis.....	17,517	5
Battle Creek, Mich.....	18,563	7
Port Huron, Mich.....	19,158	7
Concord, N. H.....	19,632	2
Niagara, N. Y.....	19,457	24
Findlay, Ohio.....	17,613	19

	Population.	Deaths from Typhoid.
Portsmouth, Ohio.....	17,870	9
Sault Ste. Marie, Mich.....	19,158	1
Natchez, Miss.....	23,898	17
Orange, N. J.....	24,141	5
Perth Amboy, N. J.....	17,699	2
Kingston, N. Y.....	24,535	5
Newburgh, N. Y.....	24,943	10
Amsterdam, N. Y.....	20,929	3
Gloversville, N. Y.....	18,319	3
Poughkeepsie, N. Y.....	24,029	7
Hamilton, Ohio.....	23,914	4
Lima, Ohio.....	21,723	8
Newark, Ohio.....	18,157	5
Central Falls, R. I.....	18,167	2
Newport, R. I.....	22,034	12
Burlington, Vt.....	18,640	4
San Diego, Cal.....	17,700	2
Meriden, Conn.....	24,296	5
New London, Conn.....	17,548	3
Norwich, Conn.....	17,251	1
Belleville, Ill.....	17,484	14
Aurora, Ill.....	24,147	10
Decatur, Ill.....	20,754	8
Galesburg, Ill.....	18,607	4
Everett, Mass.....	24,336	6
Winona, Minn.....	19,714	5
Madison, Wis.....	19,164	3
Green Bay, Wis.....	18,684	6
Nashua, N. H.....	28,898	1
Totals.....	1,092,281	544

CLASS X.—ONE HUNDRED AND NINETEEN CITIES.

Total population	1,502,829
Average population.....	12,629
Total typhoid deaths.....	674
Typhoid mortality per 100,000.....	44.8

	Population.	Deaths from Typhoid.
Lockport, N. Y.....	16,581	3
Shreveport, La.....	16,013	30
Marinette, Wis.....	16,195	19
Appleton, Wis.....	15,085	3
Lansing, Mich.....	16,485	4
Biddeford, Me.....	16,145	13
Alameda, Cal.....	16,464	5

	Population.	Deaths from Typhoid.
Rome, N. Y.....	15,343	6
Helena, Mont.....	10,770	4
Meadville, Pa.....	10,291	10
Carbondale, Pa.....	13,536	5
Columbia, Pa.....	12,316	6
Pottstown, Pa.....	13,696	5
South Bethlehem, Pa.....	13,241	6
Oil City, Pa.....	13,264	11
Rutland, Vt.....	11,499	4
Harristown, N. J.....	10,596	3
Millville, N. J.....	10,583	5
Montclair, N. J.....	13,962	1
Phillipsburg, N. J.....	10,052	2
Ithaca, N. Y.....	13,000	4
Flint, Mich.....	13,103	5
Ann Arbor, Mich.....	14,509	3
Marquette, Mich.....	10,058	8
Menominee, Mich.....	12,818	15
West Bay City, Mich.....	13,119	6
Dover, N. H.....	13,207	3
Portsmouth, N. H.....	10,637	1
Augusta, Me.....	11,683	5
Fresno, Cal.....	12,470	5
Bridgeton, N. J.....	13,913	3
Morristown, N. J.....	11,267	3
Watervliet, N. Y.....	14,321	12
Dunkirk, N. Y.....	11,616	6
Geneva, N. Y.....	10,433	5
Lansinburg, N. Y.....	12,595	8
Ogdensburg, N. Y.....	12,633	11
Saratoga, N. Y.....	12,409	6
Ashtabula, Ohio.....	12,949	5
Chillicothe, Ohio.....	12,976	9
Tiffin, Ohio.....	10,989	4
Massillon, Ohio.....	11,444	5
Marietta, Ohio.....	13,000	8
Lawrence, Kan.....	10,862	3
Phoenixville, Pa.....	9,196	4
Bennington, Vt.....	5,656	2
Barre, Vt.....	8,448	3
Owosso, Mich.....	8,696	4
Pontiac, Mich.....	9,769	1
Escanaba, Mich.....	9,549	9
Iron Mountain, Mich.....	9,242	1
Ironwood, Mich.....	9,705	4
Traverse City, Mich.....	9,407	3

	Population.	Deaths from Typhoid.
Berlin, N. H.....	8,886	3
Laconia, N. H.....	8,042	2
Rochester, N. H.....	8,466	0
Keene, N. H.....	9,165	0
Rockland, Me.....	8,150	1
Hutchinson, Kan.....	9,379	11
Carlisle, Pa.....	9,626	5
Plymouth, Pa.....	13,649	7
Glen Falls, N. Y.....	12,613	5
Jeffersonville, Ind.....	10,774	10
Columbus, Ind.....	8,130	3
Peru, Ind.....	8,463	10
Vincennes, Ind.....	10,249	8
Keokuk, Iowa.....	14,641	15
Muscatine, Iowa.....	14,073	13
Marshalltown, Iowa.....	11,544	18
Oskaloosa, Iowa.....	9,212	4
Leadville, Colo.....	12,455	6
Raleigh, N. C.....	13,643	6
Newburyport, Mass.....	14,478	4
Weymouth, Mass.....	11,324	1
Marlboro, Mass.....	13,609	1
Alexandria, Va.....	14,528	11
Annapolis, Md.....	8,525	2
Frederick, Md.....	9,296	4
Hudson, N. Y.....	9,528	5
Cortland, N. Y.....	9,014	5
Bellaire, Ohio.....	9,912	7
Middletown, Ohio.....	9,215	1
Warren, Ohio.....	8,529	6
Plainfield, N. J.....	15,369	2
Middletown, N. Y.....	14,522	3
Port Jervis, N. Y.....	9,385	3
Peekskill, N. Y.....	10,358	0
Corning, N. Y.....	11,061	5
Johnstown, N. Y.....	10,130	3
Olean, N. Y.....	9,462	3
Ironton, Ohio.....	11,868	12
DuBois, Pa.....	9,375	4
Hazelton, Pa.....	14,230	3
Mahony, Pa.....	13,504	3
Mt. Carmel, Pa.....	13,179	2
Pittston, Pa.....	12,566	2
Pottsville, Pa.....	15,710	3
Steelton, Pa.....	12,086	3
Ansonia, Conn.....	2,681	2

	Population.	Deaths from Typhoid.
Danbury, Conn.....	16,537	3
Greenwich, Conn.....	2,420	3
Middletown, Conn.....	9,589	5
Naugautuck, Conn.....	10,541	5
Norwalk, Conn.....	6,125	2
Stamford, Conn.....	15,997	1
Stonington, Conn.....	2,278	1
Wollingford, Conn.....	6,737	3
Bristol, Conn.....	6,268	11
Torrington, Conn.....	8,360	2
Danville, Ill.....	16,354	17
Jacksonville, Ill.....	15,078	10
Ottawa, Ill.....	10,588	3
Michigan City, Ind.....	14,850	3
Beverley, Mass.....	13,884	4
Melrose, Mass.....	12,962	6
Mankato, Minn.....	10,599	6
Chippewa Falls, Wis.....	8,094	3
Beloit, Wis.....	10,436	0
Manitowoc, Wis.....	11,786	3
Totals.....	1,502,829	674

NOTE.—In this paper, as originally printed in the *Journal of the American Medical Association*, the City of Savannah, Georgia, was erroneously given the bad distinction of a typhoid mortality of 147 per 100,000. The author in reading the Census tables strayed from the column containing Savannah's figures, and took instead the typhoid mortality for the rural area in which Savannah is situated. There were seven such errors in the original tables. The figures in the present report have been verified by reference to the Census tables and are believed to be correct.

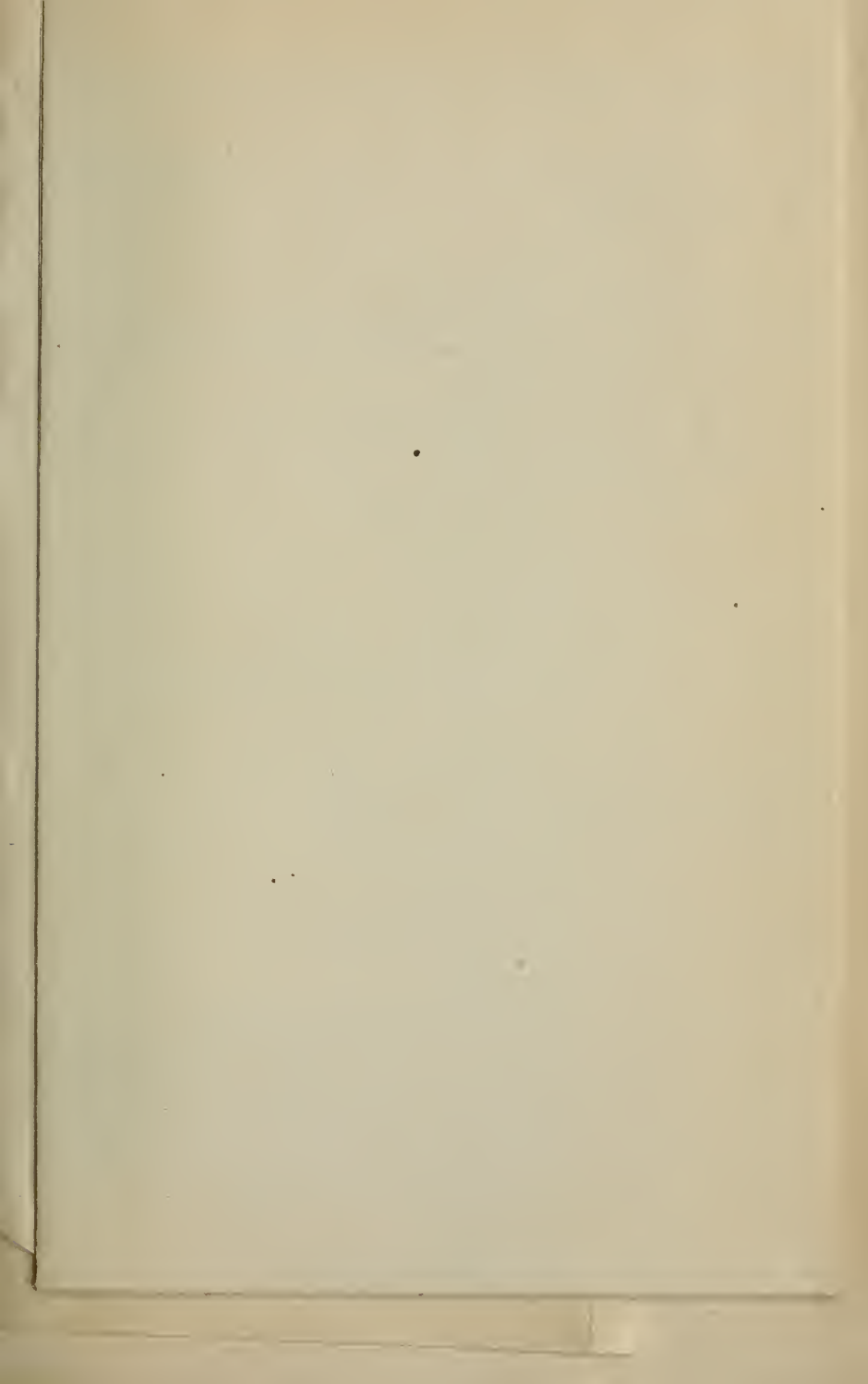


TABLE A—DEATHS IN 1903 IN MARYLAND, EXCLUSIVE OF BALTIMORE, BY SEX, COLOR, AGE, MONTHS AND CAUSES

CAUSES OF DEATH.

January	February	March	April	May	June	July	August	September	October	November	December	Total	White	Colored	Total	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	289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TABLE B—BIRTHS, BIRTH RATE, DEATHS, DEATH RATE, INCREASE AND RATE OF INCREASE OF THE WHITE AND COLORED POPULATION OF MARYLAND, BY COUNTIES.

	WHOLE POPULATION.				WHITES.				COLORED.				WHOLE POPULATION.				WHITES.				COLORED.				POPULATION 1903.		
	Births.	Deaths.	Gain.	Loss.	Births.	Deaths.	Gain.	Loss.	Births.	Deaths.	Gain.	Loss.	Births per 1000 population.	Deaths per 1000 population.	Gain.	Loss.	Births per 1000 population.	Deaths per 1000 population.	Gain.	Loss.	Births per 1000 population.	Deaths per 1000 population.	Gain.	Loss.	White.	Colored.	Total.
Allegany.....	1223	678	545	.....	1180	636	544	.....	40	42	.....	2	22.06	12.23	9.83	.....	21.98	11.84	10.14	.....	23.28	24.44	.....	1.16	53717	1718	55435
Anne Arundel.....	495	534	.....	39	290	281	8	.....	204	253	.....	49	12.22	13.18	.....	.90	11.73	11.39	.34	.....	12.91	16.01	.....	4.10	24709	15797	40506
Baltimore.....	1242	1460	.....	218	1062	1255	193	.....	173	205	.....	32	13.24	15.56	.....	2.32	13.01	15.37	.....	2.36	14.19	16.81	.....	2.62	81592	12191	93783
Calvert.....	239	125	114	.....	134	48	86	.....	99	77	22	.....	22.62	11.83	10.79	.....	25.37	9.08	10.14	.....	18.93	14.58	4.35	.....	5282	5281	10563
Caroline.....	113	144	.....	19	97	79	18	.....	15	53	.....	38	6.73	7.86	.....	1.13	7.80	6.35	1.45	.....	3.41	12.14	.....	8.73	12424	4365	16789
Carroll.....	359	425	.....	66	319	374	.....	55	40	51	.....	11	10.27	12.17	.....	1.90	9.77	11.42	.....	1.65	18.18	23.17	.....	4.99	32726	2200	3.926
Cecil.....	347	342	5	.....	311	256	55	.....	36	86	.....	50	13.61	13.42	.19	.....	14.35	11.81	2.54	.....	9.41	22.49	.....	13.08	21661	3823	25484
Charles.....	367	230	137	.....	136	90	46	.....	230	140	90	.....	21.12	13.23	7.89	.....	17.80	11.50	6.30	.....	24.06	14.65	10.41	.....	7820	9556	17376
Dorchester.....	579	297	282	.....	296	176	120	.....	179	121	58	.....	20.01	10.26	9.75	.....	15.50	9.25	6.25	.....	18.19	12.30	5.84	.....	19096	9836	28932
Frederick.....	624	700	.....	76	565	548	17	.....	59	152	.....	93	11.75	13.19	.....	1.44	12.09	11.73	.36	.....	9.26	23.87	.....	14.61	46700	6368	53068
Garrett.....	165	134	31	.....	162	130	32	.....	3	4	.....	1	9.17	7.45	1.72	.....	9.07	7.33	1.74	.....	23.80	31.74	.....	7.94	17856	126	17982
Harford.....	178	345	.....	167	146	241	.....	95	33	104	.....	71	5.70	11.05	.....	5.35	5.92	9.44	.....	3.52	5.03	15.86	.....	10.83	24667	6556	31223
Howard.....	278	225	53	.....	220	155	65	.....	57	70	.....	13	16.09	13.02	3.07	.....	17.21	12.12	5.09	.....	12.69	15.59	.....	2.90	12780	4490	17270
Kent.....	207	298	.....	91	147	146	1	.....	57	152	.....	95	10.87	15.65	.....	4.78	12.87	12.78	.09	.....	7.48	19.95	.....	2.47	11422	7615	19037
Montgomery.....	400	234	166	.....	250	144	106	.....	150	90	60	.....	12.85	7.51	5.34	.....	12.05	6.94	5.11	.....	14.45	8.67	5.78	.....	20748	10374	31122
Prince George's.....	553	479	126	.....	322	215	107	.....	231	264	.....	33	18.77	16.26	2.51	.....	18.25	12.19	6.06	.....	19.56	22.35	.....	2.79	17640	11809	29449
Queen Anne's.....	175	223	.....	48	155	113	42	.....	20	110	.....	90	9.52	12.13	.....	2.61	12.98	9.46	3.52	.....	3.11	17.05	.....	13.94	11937	6427	18364
Somerset.....	360	269	91	.....	239	167	72	.....	118	102	16	.....	13.73	10.26	3.47	.....	14.47	10.11	4.36	.....	12.16	10.52	1.64	.....	16511	9696	26207
St. Mary's.....	141	70	71	.....	96	35	61	.....	45	35	10	.....	8.20	4.07	4.13	.....	10.74	3.91	6.83	.....	5.45	4.24	1.21	.....	8935	8247	17182
Talbot.....	236	248	.....	12	178	118	60	.....	56	130	.....	74	11.03	12.05	.....	1.02	13.74	9.10	4.64	.....	7.35	17.08	.....	9.73	12956	7609	20565
Washington.....	699	629	50	.....	666	559	109	.....	28	70	.....	42	14.98	13.48	1.50	.....	15.23	12.75	2.48	.....	10.00	25.02	.....	15.02	43839	2798	46637
Wicomico.....	163	237	.....	74	153	172	.....	19	8	65	.....	57	6.90	10.03	.....	3.13	8.75	9.85	.....	1.10	1.30	10.58	.....	9.28	17473	6139	23612
Worcester.....	230	253	.....	20	121	165	.....	44	107	88	19	.....	10.66	11.73	.....	1.07	8.41	11.48	.....	3.07	14.89	12.24	2.65	.....	14372	7186	21558
State (exclusive of Baltimore).....	9373	8567	806	.....	7247	6103	1144	.....	1988	2454	.....	466	13.46	12.29	1.17	.....	13.06	11.16	1.90	.....	12.34	15.31	.....	2.97	546863	160207	697070
Baltimore City.....	8620	10141	.....	1521	7001	7659	.....	658	1619	2482	.....	863	16.19	19.05	.....	2.86	15.48	16.93	.....	1.45	20.28	31.09	.....	10.81	452374	79831	532205
State and city.....	17993	18708	.....	715	14248	13762	486	.....	3607	4936	.....	1329	14.63	15.21	.....	.58	14.40	13.91	.49	.....	15.02	20.56	.....	5.54	989237	240038	1229275

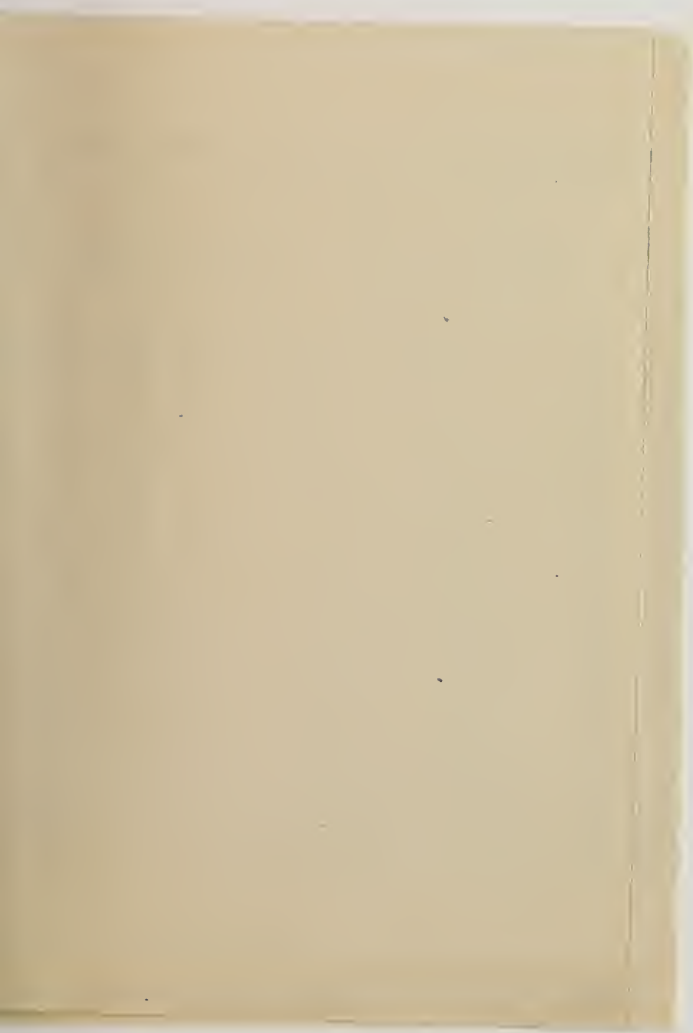


TABLE C.—DEATHS IN MARYLAND, 1903, BY COUNTIES, WITH DISTINCTIONS OF SEASON, AGE, SEX AND COLOR. (Baltimore City not included.)

COUNTIES.	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November.	December.	Male.	Female.	White.	Colored.	Total.	0 to 1.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and Over	Unknown.
Allegany	56	61	57	10	85	54	60	55	62	65	45	68	381	297	636	42	678	163	51	26	17	13	40	42	29	26	22	25	24	26	36	31	29	26	42	10
Anne Arundel.....	52	39	49	49	51	58	61	49	36	35	21	34	286	248	281	253	534	150	61	17	9	30	29	18	13	10	18	16	9	29	32	23	21	16	27	6
Baltimore	142	137	122	90	138	86	157	125	110	127	105	121	779	681	1255	205	1460	277	115	43	24	46	63	71	61	50	71	48	50	81	73	91	88	65	114	29
Calvert	15	15	7	4	14	13	10	7	13	7	2	18	73	52	48	77	125	21	16	7	1	3	12	5	6	0	4	2	2	6	11	4	8	5	9	3
Caroline..	12	9	13	13	7	8	11	12	11	7	10	19	57	75	79	53	132	23	6	5	5	9	13	2	5	2	2	5	6	2	8	10	6	8	14	1
Carroll.	47	41	38	32	37	23	38	42	32	28	38	29	211	214	374	51	425	76	30	8	10	11	16	10	10	18	16	9	14	18	26	24	40	26	58	5
Cecil.	28	21	36	43	28	27	20	35	15	25	32	32	181	161	256	86	342	55	37	9	5	5	12	11	11	14	14	15	13	17	15	18	29	20	36	6
Charles.	18	19	22	14	17	26	20	18	17	14	30	15	102	128	90	140	230	61	19	7	11	11	12	15	5	7	5	2	6	7	8	12	13	10	15	4
Dorchester	21	31	19	18	17	23	37	31	29	24	22	25	151	146	176	121	297	63	24	7	12	16	21	16	12	12	14	8	8	9	10	21	19	11	9	5
Frederick	59	66	78	70	55	42	54	58	48	66	41	63	354	346	548	152	700	133	60	24	16	20	28	27	21	19	17	10	19	24	42	42	54	61	72	11
Garrett	14	10	15	12	10	8	13	13	9	8	14	68	66	130	4	134	25	17	4	2	6	10	8	3	3	6	2	7	9	3	7	4	5	13	0	
Harford.	49	30	42	25	30	19	28	27	26	23	20	27	182	163	241	104	345	52	25	4	4	19	6	12	14	9	14	14	10	15	15	30	25	23	39	15
Howard.....	27	20	24	20	15	16	23	17	16	15	12	20	117	108	155	70	225	50	14	7	9	16	10	8	6	5	6	4	10	7	9	10	11	15	24	4
Kent.....	27	30	31	18	24	26	25	32	30	23	12	20	140	158	146	152	298	67	29	11	6	17	12	11	10	6	8	12	10	13	8	16	23	12	21	6
Montgomery.....	24	17	23	23	10	14	25	18	21	23	11	25	110	124	144	90	234	51	28	14	5	8	12	7	5	6	4	4	8	9	11	16	9	16	20	1
Prince George's	44	45	39	49	30	44	57	37	28	32	39	35	258	221	215	264	479	116	51	14	15	18	22	20	13	20	17	9	21	15	29	20	25	24	23	7
Queen Anne's.....	12	23	28	21	12	12	26	18	17	13	22	19	112	111	113	110	223	51	17	5	6	7	8	14	10	6	7	8	7	10	10	15	9	8	23	2
Somerset.....	28	30	20	24	15	14	27	21	20	24	26	129	140	167	102	269	49	20	4	9	12	9	7	9	7	9	9	9	9	9	18	20	20	19	23	7
St. Mary's.....	2	7	4	5	1	4	11	6	4	1	8	17	44	26	35	35	70	12	6	0	2	2	5	3	1	2	2	1	2	4	5	5	5	2	6	5
Talbot.....	29	18	21	20	18	21	23	19	26	13	22	18	114	134	118	130	248	39	27	2	4	12	14	3	10	10	8	9	9	12	14	19	19	17	13	7
Washington.	50	55	49	65	51	36	60	51	48	53	58	53	307	322	559	70	629	110	41	14	20	13	23	15	18	16	29	18	29	31	40	53	47	46	60	6
Wicomico	22	25	16	19	18	25	35	20	16	14	13	14	115	122	172	65	237	49	15	4	4	16	14	3	7	10	10	13	8	6	17	13	12	12	21	3
Worcester.....	22	22	29	11	17	15	32	23	25	17	23	17	125	128	165	88	253	60	18	7	9	5	10	8	6	9	7	6	6	12	10	10	24	21	19	6
Totals.....	800	771	782	655	700	614	848	734	662	654	618	729	4396	4171	6103	2464	8567	1753	727	243	205	315	401	336	285	267	310	249	287	371	450	510	540	468	701	149

TABLE II.
BIRTHS IN 1903, BY COLOR, SEX AND LOCALITY.

	Male.	Female.	Unknown.	White.	Colored.	Unknown.	Total.
Allegany	700	520	3	1180	40	3	1223
Anne Arundel....	264	230	1	290	204	1	495
Baltimore	621	615	6	1062	173	7	1242
Calvert.....	112	121	6	134	99	6	239
Caroline	48	64	1	97	15	1	113
Carroll	173	186	.....	319	40	.....	359
Cecil	187	160	.....	311	36	.....	347
Charles.....	182	184	1	136	230	1	367
Dorchester.....	304	271	4	396	179	4	579
Frederick	356	266	2	565	59	.....	624
Garrett	85	80	.....	162	3	.....	165
Harford.....	98	80	.....	146	32	.....	178
Howard	139	137	2	220	57	1	278
Kent.....	105	99	3	147	57	3	207
Montgomery.....	183	217	.....	250	150	.....	400
Prince George's	273	277	3	322	231	.....	553
Queen Anne's.....	89	86	.....	155	20	.....	175
Somerset.....	183	172	5	239	118	3	360
St. Mary's	82	59	.....	96	45	.....	141
Talbot	102	132	2	178	56	2	236
Washington.....	369	327	3	668	28	3	699
Wicomico	78	76	9	153	8	2	163
Worcester.....	128	101	1	121	107	2	230
Baltimore city.....	4428	4192	.....	7001	1619	.....	8620
Totals.....	9289	8652	52	14348	3606	39	17993

TABLE III.
DEATHS FOR THE YEAR 1903 BY AGES, SHOWING PERCENTAGES
OF THE TOTAL MORTALITY FALLING IN THE SEVERAL
PERIODS OF LIFE. (ALL MARYLAND).

	Number.	Per Cent.
0 to 1	4467	24.09
0 to 5	5582	30.09
5 to 10	503	2.71
10 to 15	380	2.05
15 to 20	615	3.32
20 to 30	1604	8.65
30 to 40	1472	7.9
40 to 50	1526	8.23
50 to 60	1678	9.05
60 to 70	2039	11.00
70 to 80	1955	10.5
80 and over	1192	6.43
Total.....	18546	

TABLE IV.

DEATHS FOR THE YEAR 1903 BY AGES, SHOWING PERCENTAGES
OF THE TOTAL MORTALITY FALLING IN THE SEVERAL
PERIODS OF LIFE. (MARYLAND, 1903.) (EXCLUSIVE
OF BALTIMORE, 1903.)

	Number	Per Cent. of Total Mortality.
0 to 1	1753	20.82
0 to 5	2480	29.46
5 to 10	243	2.89
10 to 15	205	3.43
15 to 20	315	3.86
20 to 25	401	4.76
25 to 30	336	3.99
30 to 35	285	3.39
35 to 40	267	3.17
40 to 45	310	3.68
45 to 50	249	2.96
50 to 55	287	3.41
55 to 60	371	4.41
60 to 65	450	5.35
65 to 70	510	6.06
70 to 75	540	6.88
75 to 80	468	5.55
80 and over.....	701	8.32
Total	8418	

TABLE V.

POPULATION AT QUINQUENNIAL AGE PERIODS, WITH DEATHS IN
EACH PERIOD, AND DEATH RATES PER 1,000 LIVING IN
THE AGE PERIODS. (ALL MARYLAND, 1903.
ESTIMATED POPULATION, 1,229,275.)

	Per Cent.	Number Living at Each Age Period.	Deaths.	Death Rate Per 1,000 of Those Liv- ing in the Age Period.
Under 5 years.....	11.33	139,317	5,582	40.07
5 to 10.....	11.25	138,293	503	3.63
10 to 15.....	10.75	132,147	380	2.87
15 to 20.....	10.1	124,157	615	4.95
20 to 25.....	9.66	118,829	.....	.....
25 to 30.....	8.5	104,488	1,604	7.18
30 to 35.....	7.5	92,195	.....	.....
35 to 40.....	6.66	81,951	1,472	8.51
40 to 45.....	5.75	70,683	.....	.....
45 to 50.....	4.66	57,366	1,526	11.91
50 to 55.....	4	49,171	.....	.....
55 to 60.....	3.1	38,100	1,678	20.37
60 to 65.....	2.5	30,732	.....	.....
65 to 70.....	1.8	22,757	2,039	38.12
70 to 75.....	1.33	16,390	.....	.....
75 to 80.....	.66	8,195	1,955	79.5
80 to 85.....	.33	4,097	.....	.....
85 to 90.....	.20	2,458	.....	.....
90 to 95.....	.1	1,229	.....	.....
95 to 100.....	.05	614	1,192	141.94

TABLE VI.

A CLASSIFICATION OF CAUSES OF DEATH, WITH THE NUMBERS OCCURRING, AND THEIR RATIOS TO TOTAL MORTALITY.
(MARYLAND, EXCLUSIVE OF BALTIMORE, 1903.)

PARASITIC DISEASES.	Number.	Per Cent.
*INFECTIOUS AND CONTAGIOUS DISEASES.		
Typhoid fever, scarlatina, whooping-cough, diphtheria, influenza, cerebro-spinal meningitis (epidemic), small pox, measles, glanders, anthrax, actinomycosis.....	911	10.63
*COMMUNICABLE DISEASES.		
Malaria, dysentery, tuberculosis, syphilis, tetanus, pneumonia, gonorrhœa, rabies.....	1879	22.93
†OTHER INFECTIONS.		
Septicæmia and pyemia, rheumatism (febrile), meningitis, bronchitis, broncho-pneumonia, gastro-intestinal inflammations (summer diarrhœa of infants), tonsillitis, pharyngitis, cholecystitis (and other inflammations of the liver and gall-bladder), pericarditis, cystitis, peritonitis, acute nephritis, gangrene, abscess, furuncle, erysipelas, pleurisy, appendicitis.....	1438	16.72
CONSTITUTIONAL DYSCRASIAS.		
Diabetes, exophthalmic goitre, gout, anæmia, chlorosis.....	62	.72
CONGENITAL DISEASES AND MALFORMATIONS.		
Morbus ceruleus, icterus neonatorum, marasmus, sclerema.....	354	4.13
POISONINGS AND INTOXICATIONS.		
Alcoholism, saturnism, and occupational intoxications.....	26	.30
MALIGNANT NEOPLASMS.		
Epithelioma, carcinoma, sarcoma.....	275	3.21
‡DEGENERATIONS.		
Cerebral congestion and hemorrhage, paralysis (without specified cause), diffuse meningo-encephalitis, cerebral softening (?), epilepsy, organic diseases of the heart, angina pectoris, arteriosclerosis, aneurysm (and allied arterial degeneration), asthma (in all forms), hepatic cirrhosis, Bright's disease, senile debility and dementia, locomotor ataxia.....	2239	26.07
VIOLENCE.		
Suicide, homicide, murder, duelling, accidental violence, poisoning, gas inhalation, drowning, strangulation and legal execution, death by insolation, lightning and freezing, burns and scalds.....	220	2.57
Ill-defined diseases.....	364	4.24
Other inaccurately-classified affections.....	799	9.32
Total.....	8567	

*All communicable diseases have been assumed to be due to a living organism, and included in this list whether specific living cause has been discovered or not.

†The distinction between those three classes is one of kind rather than degree, as all parasitic diseases may at some time be communicable.

‡Includes mainly the disorders dependent on advanced years and prolonged strain.

TABLE VII.

PRINCIPAL CAUSES OF DEATH IN MARYLAND IN 1903, WITH DEATH RATES PER 10,000 (BALTIMORE CITY EXCLUDED.)

	Number Deaths.	Death Rate per 10,000 Living
1 Tuberculosis, Pulmonary and Laryngeal..	1090	15.8
2 Pneumonia	562	8.06
3 Infantile Diarrhœa.....	535	7.67
4 Organic Diseases of the Heart.....	535	7.67
5 Bright's Disease.....	390	5.6
6 Senile Debility.....	459	6.58
7 Cerebral Hemorrhage.....	358	5.14
8 Congenital Debility.....	354	5.08
9 Malignant Neoplasms.....	275	3.95
10 Typhoid Fever	299	4.28
11 Unspecified and Ill-defined Causes.....	364	5.22
12 Paralysis	239	3.43
13 Accidental Violence.....	293	4.23
14 Whooping Cough.....	132	1.89
15 Broncho-Pneumonia.....	132	1.89
16 Diphtheria.....	150	2.15

TABLE VIII.

PRINCIPAL CAUSES OF DEATH IN ALL MARYLAND IN 1903, WITH DEATH RATES PER 10,000 OF POPULATION.

	Number Deaths.	Death Rate per 10,000 Living.
1 Tuberculosis, Pulmonary and Laryngeal..	2306	18.77
2 Pneumonia	1357	11.04
3 Infantile Diarrhœa.....	1105	8.99
4 Organic Disease of Heart.....	1185	9.61
5 Bright's Disease	1,183	8.82
6 Senility.....	717	5.83
7 Cerebral Hemorrhage	727	5.91
8 Congenital Debility.....	804	6.55
9 Malignant Neoplasms.....	645	5.24
10 Typhoid Fever	488	3.97
11 Unspecified and Ill-Defined Causes.....	459	3.73
12 Paralysis.....	417	3.39
13 Accidental Violence	685	5.57
14 Whooping-Cough.....	196	1.6
15 Infantile Convulsions.....	284	2.31
16 Broncho-Pneumonia.....	438	3.56
17 Diphtheria.....	310	2.52

TABLE IX.

PRINCIPAL CAUSES OF DEATH IN MARYLAND IN 1903, WITH RATIOS TO TOTAL MORTALITY. (BALTIMORE EXCLUDED.)

	Number	Per Cent.
1 Tuberculosis of the Lungs and Larynx....	2306	12.87
2 Infantile Diarrhoea.....	1105	5.91
3 Pneumonia.....	1357	7.25
4 <i>a.</i> Organic Disease of the Heart.....	1185	5.13
4 <i>b.</i> Senile Debility.....	717	3.83
5 Congenital Debility.....	804	4.3
6 Cerebral Congestion and Hemorrhage.....	727	3.9
7 Bright's Disease.....	1085	5.8
8 Unspecified and Ill-defined Causes of Death	459	2.45
9 Typhoid Fever.....	488	2.68
10 Whooping-Cough.....	196	1.05
11 Accidental Traumatism.....	602	3.23
12 Paralysis Without Specified Cause.....	371	1.98
13 Convulsions of Children.....	284	1.52
14 Diphtheria and Croup.....	310	1.71
15 Broncho-Pneumonia.....	438	2.34

TABLE X.

PRINCIPAL CAUSES OF DEATH IN ALL MARYLAND IN 1903, WITH RATIOS TO TOTAL MORTALITY.

	Number.	Per Cent.
1 Tuberculosis of the Lungs and Larynx....	1090	12.72
2 Infantile Diarrhoea.....	535	6.19
3 Pneumonia.....	562	6.50
4 <i>a.</i> Organic Disease of the Heart.....	535	6.19
4 <i>b.</i> Senile Debility.. ..	459	5.41
5 Congenital Debility.. ..	354	4.13
6 Cerebral Congestion and Hemorrhage.....	358	4.18
7 Bright's Disease.....	390	4.67
8 Unspecified and Ill-defined Causes of Death	364	4.25
9 Typhoid Fever	299	3.49
10 Whooping-Cough	132	1.56
11 Accidental Traumatism.....	200	2.33
12 Paralysis Without Specified Cause.....	206	2.40
13 Convulsions of Children.....	151	1.76
14 Diphtheria and Croup.....	150	1.75
15 Broncho-Pneumonia.	132	1.54

TABLE XI.

DEATHS FROM FIFTEEN PRINCIPAL CAUSES IN MARYLAND (EXCLUSIVE OF BALTIMORE), 1903, SHOWING NUMBER AND PERCENTAGE OF DEATH IN EACH OF THREE AGE PERIODS.

	Number.	Per Cent. in Each Period.
TYPHOID FEVER.		
Under 15.....	78	26.62
15 to 45.....	175	59.72
45 and over.....	40	13.66
	293	
PARALYSIS.		
Under 15.....	1	.42
15 to 45.....	17	7.26
45 and over.....	216	92.32
	234	
BRIGHT'S DISEASE.		
Under 15.....	13	3.43
15 to 45.....	63	16.57
45 and over.....	304	80.00
	380	
WHOOPIING-COUGH.		
Under 15.....	128	97.71
15 to 45.....	2	1.52
45 and over.....	1	.77
	131	
HEART DISEASE.		
Under 15.....	26	4.56
15 to 45.....	79	13.85
45 and over.....	465	81.59
	570	
MALIGNANT NEOPLASMS.		
Under 15.....	6	2.25
15 to 45.....	43	16.16
45 and over.....	217	81.59
	266	
DIPHTHERIA.		
Under 15.....	142	98.65
15 to 45.....	6	1.35
45 and over.....		
	148	
BRONCHO-PNEUMONIA.		
Under 15.....	104	83.20
15 to 45.....	2	1.60
45 and over.....	19	15.20
	125	

TABLE XI—Continued.

	Number.	Per Cent. in Each Period.
ACCIDENTAL VIOLENCE.		
Under 15.....	71	26.43
15 to 45.....	127	47.14
45 and over.....	71	26.43
	269	
TUBERCULOSIS (Lungs and Larynx).		
Under 15.....	120	11.13
15 to 45.....	673	62.43
45 and over.....	285	26.44
	1078	
PNEUMONIA.		
Under 15.....	278	49.64
15 to 45.....	95	16.96
45 and over.....	187	33.40
	560	
CEREBRAL HEMORRHAGE.		
Under 15.....	11	.31
15 to 45.....	31	8.94
45 and over.....	305	90.75
	347	
DIARRHŒA AND ENTERITIS.		
Under 15.....	566	89.27
15 to 45.....	16	2.52
45 and over.....	52	8.21
	634	
OTHER CAUSES.		
Senile debility (over 45).....	455	.....
Congenital debility (under 15).....	352	.....
Infantile convulsions (under 5).....	151	.....
Unspecified and ill-defined causes.....	364	.....

TABLE XII.

DEATHS, 1903, BY MONTHS, WITH PERCENTAGES. (RURAL MARYLAND.)

	Deaths.	Per Cent.
January	800	9.34
February.....	771	8.87
March.....	782	9.13
April.....	655	7.65
May.....	700	8.05
June.....	614	7.17
July.....	848	9.89
August.....	734	8.45
September.....	662	7.73
October.....	654	7.63
November.....	618	7.21
December.....	729	8.39

List of County Health Officers.

Allegany	Dr. J. M. Spear	Cumberland.
Anne Arundel	Dr. H. R. Walton	Annapolis.
Baltimore County—		
1st District	Dr. C. L. Mattfeldt	Catonsville.
2d “	Dr. John E. Bolte	Tyler.
3d “	Dr. Henry A. Naylor	Pikesville.
4th “	Dr. Harry M. Slade	Reisterstown.
5th “	Dr. J. H. Drach	Butler.
6th “	Dr. Joseph S. Baldwin	Eklo.
7th “	Dr. Thomas Baldwin	White Hall.
8th “	Dr. T. Ross Payne	Corbett.
9th “	Dr. R. C. Massenburg	Towson.
10th “	Dr. Thomas Emory	Hess.
11th “	Dr. Chas. F. H. Gorsuch	Fork.
12th “	Dr. J. C. Schofield	Highlandtown.
13th “	Dr. Frank H. Ruhl	Lansdowne.
14th “	Dr. Wm. D. Corse	Gardenville.
15th “	Dr. John W. Harrison	Middle River.
Calvert	Dr. A. J. Williams	Barstow.
Caroline	Dr. Enoch George	Denton.
Carroll	Dr. Charles R. Foutz	Westminster.
Cecil	Dr. Howard Bratton	Elkton.
Charles	Dr. G. O. Monroe	Waldorf.
Dorchester	Dr. Guy Steele	Cambridge.
Garrett	Dr. W. H. Ravenscroft	Oakland.
Harford	Dr. F. P. Smithson	Forest Hill.
Howard	Dr. Thos. B. Owings	Ellicott City.
Kent	Dr. Wm. R. Messick	Chestertown.
Montgomery	Dr. Wm. L. Lewis	Kensington.
Prince George's	Dr. L. A. Griffith	Upper Marlboro.
Queen Anne's	Dr. Charles Cockey	Queentown.
Somerset	Dr. T. Jacob Smith	Princess Anne.
St. Mary's	Dr. Thomas H. Lynch	Leonardtown.
Talbot	Dr. E. R. Trippe	Easton.
Washington	Dr. C. R. Scheller	Hagerstown.
Wicomico	Dr. Chas. R. Truitt	Salisbury.
Worcester	Dr. C. P. Jones	Snow Hill.

Town Health Officers.

Aberdeen	Dr. J. H. Kennedy.
Annapolis	Dr. John Ridout.
Brunswick	Dr. H. S. Hedges.
Cambridge.....	Dr. E. E. Wolff.
Cumberland	Dr. J. M. Spear.
Frederick.....	Dr. S. F. Thomas.
Frostburg.....	Dr. W. O. McLane.
Havre de Grace.....	Dr. J. Lee Hopkins.
Kensington.....	Dr. Wm. L. Lewis.
Olney	Dr. Charles Farquhar.
Lonaconing.....	Dr. James O. Bullock.
Laurel.....	Dr. T. W. Byerly.
Takoma Park.....	Mr. L. M. Mooers.

List of Sub-Registrars.

ALLEGANY COUNTY.

Dr. J. O. Bullock	Lonaconing.
Dr. S. A. Boucher	Barton.
Dr. Edward Quarles.....	Mt. Savage.
Dr. A. P. Twigg.....	Flintstone.
Dr. L. V. Harbaugh	Old Town.
Dr. J. B. Shupe.....	Westernport.
Dr. James H. Carpenter.....	Midland.
Dr. J. A. Watson	Piney Grove.
Dr. J. Carl Smith.....	Ellerslie.
Dr. C. L. Cunningham.....	Cresaptown.
Dr. Edward Cresap.....	Rawlings Station.

ANNE ARUNDEL COUNTY.

Mr. Morris Talbot.....	Davidsonville.
Dr. Wm. G. Williams	Conoways.
Dr. Clyde Williams.....	Armiger.
Dr. George Crane.....	Armiger.
Dr. R. A. Hammond.....	Jessup.
Dr. J. W. DuBois.....	Gambrills.
Dr. C. H. Brooke.....	Brooklyn.
Dr. J. B. Robinson	Brooklyn.
Dr. C. R. Winterson.....	Elkridge.
Dr. F. H. Thompson.....	Annapolis.
Dr. W. C. Claude	Annapolis.
Dr. A. H. Perrie.....	McKendree.
Dr. G. T. Dent.....	Churchton.
Dr. Carl B. Boyd.....	Shadyside.
Dr. Thomas H. Brayshaw.....	Glen Burnie.
Dr. Guy Latimer	West River.

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Dr. Henry A. Naylor.....	Pikesville.
Dr. Harry M. Slade.....	Reisterstown.
Dr. J. H. Drach.....	Butler.
Dr. Thomas Baldwin.....	Gemmill.
Dr. Joseph S. Baldwin	Eklo.
Dr. T. Ross Payne.....	Corbett.
Dr. R. C. Massenburg.....	Towson.
Dr. Thomas H. Emory	Hess, Harford county.
Dr. James F. H. Gorsuch.....	Fork, Baltimore county.
Dr. J. C. Schofield.....	Highlandtown.
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Mr. C. D. Carpenter	Pisgah.
Mr. J. R. Perrie.....	Harris Lot.
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Mr. Harry Turpin	Greensboro.
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Mr. Marion J. Leister	Finksburg.
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Dr. E. L. Jones	East New Market.
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Mr. Willard Melvin.....	Chestertown.
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Dr. C. H. Nourse.....	Darnestown.
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Dr. J. R. Batson.....	Spencerville.
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Mr. R. H. Phillips.....	Barclay.
Mr. R. F. Hartly	Crumpton.
Mr. J. E. Bryan.....	Kent Island.
Mr. B. Emory.....	Centreville.
Mr. C. O. Coursey.....	Ford's Store or Winchester.
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Mr. C. E. Smith.....	Church Hill.
Mr. E. W. Cooper	Sudlersville.

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Dr. Walter B. Dent.....	Oakley.
Dr. R. V. Palmers.....	Palmers.
Dr. J. O. King.....	Oakville.
Dr. J. R. Morgan.....	Mechanicsville.
Dr. I. H. Lynch.....	Valley Lee.
Dr. L. M. Tippet.....	St. Inigoes.
Mr. J. A. B. Shermantine.....	California.
Mr. — Drury.....	Morganza.

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Mr. Samuel W. Kennerly	Crisfield
Mr. Thos. W. Landon.....	Fairmount
Mr. George R. Handy	Westover.
Mr. G. W. Riddle.....	Pocomoke City (Dublin Dist.)
Mr. Aden Davis, Jr.....	Marion.
Mr. W. S. Kelly.....	Dame's Quarter.
Mr. Jas. H. Anderson.....	Deal's Island.
Dr. R. L. Hoyt.....	Oriole.
Dr. George R. Marsh.....	Mt. Vernon.

TALBOT COUNTY.

Mr. Wm. P. Holliday.....	Oxford.
Mr. Olga Smith	Cordova.
Mr. Walter Skinner	St. Michaels.
Mr. Jos. G. Skinner.....	McDaniel.
Mr. Wm. J. Jackson	Tilghman.
Mr. John S. Sullivan.....	Trappe.
Mr. John Fairbank	Easton.
Dr. James G. Haddaway.....	St. Michaels.

WASHINGTON COUNTY.

Mr. Van S. Brashears.....	Sharpsburg
Mr. J. E. Hawken.....	Williamsport
Mr. Joseph M. Little	Clearspring.
Mr. Charles H. Sutton.....	Hancock.
Mr. O. Jesse Stottlemeyer.....	Boonsboro.
Mr. Daniel G. Krouse	Cavetown.
Mr. J. H. Ferguson.....	Smithsburg.
Mr. Eugene A. Browne.....	Brownsville.
Mr. B. G. Sheiss	Leitersburg.
Mr. M. Z. Miller.....	Funkstown.
Mr. James Morrow	Sharpsburg.
Mr. T. Bell Johnson.....	Clearspring.
Mr. Preston E. Miller.....	Keep Tryst.
Dr. V. M. Richard.....	Fair Play.
Mr. John H. Baughman.....	Maugansville.
Mr. John Meyers	Green Spring Furnace.
Mr. Henry Shirk	Indian Spring.
Mr. John Clarke.....	Beaver Creek.
Mr. Joshua C. Hine.....	Keedysville.
Mr. A. M. Scott	Downsville.
Mr. John B. Huyett.....	Conocoheague.
Mr. Joseph Harrison.....	Hancock.

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Mr. H. James Truitt.....	Pittsville.
Mr. Paul Powell.....	Powellsville.
Mr. W. A. C. Williams.....	Delmar.
Mr. George Freeny.....	Quantico.
Mr. J. S. English.....	Mardella.
Mr. L. T. Walker ..	Nanticoke.
Mr. Bernard Denson.....	White Haven.
Mr. Thos. Turpin.....	Salisbury.
Mr. Wesley Truitt.....	Willards.
Mr. S. P. Parsons.....	Parsonsburg.
Mr. Isaac S. Messick.....	Fruitland.
Mr. H. S. Phillips	Hebron.
Mr. W. C. Mann.....	Sharptown.
Mr. Wm. Benton.....	Tyaskin.
Mr. Wm. A. Trader.....	Salisbury

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Mr. William Rounds.....	Snow Hill.
Mr. H. King.....	Pocomoke City.
Mr. D. A. Massey.....	Berlin.
Mr. Timothy Rayne	Bishopville.
Mr. W. O. Payne	Stockton.
Mr. Thomas Corbin.....	Corbin P. O.
Mr. Cott. Jas. Mumford.....	Ocean City.
Mr. John B. Richards.....	Newark.
Mr. William F. Hillman	Klej Grange.

List of Bacteriological Sub-Stations.

ALLEGANY COUNTY.

Dr. J. M. Spear.....Cumberland.
 C. E. Pearce's Drug CompanyFrostburg.
 C. H. Holtzman, DruggistCumberland.

ANNE ARUNDEL COUNTY.

Dr. W. H. Rullman.....Annapolis.

BALTIMORE COUNTY.

Farrow Bros.....Northav.&1othst., Walbr'k.
 H. R. Polk, Druggist.....Arlington.
 J. A. CarnesCockeysville.
 J. S. WoodwardSparrow's Point.
 T. Ross Payne.....Corbett.
 Massenburg & Co.....Towson.
 Dr. J. Royston Green.....Towson.
 W. P. Fields.....Pikesville.
 Gibson Pharmacy.....Roland Park.
 Truitt's Pharmacy.....Roland Park.
 J. H. DrachPhoenix.
 Frank PurdumHamilton.

CAROLINE COUNTY.

Smith's Pharmacy.....Ridgely.
 Dr. George W. BatsonGreensboro.
 Dr. J. L. Noble.....Preston.

CARROLL COUNTY.

Dr. R. F. WellsHampstead.
 Dr. J. S. MatthiasWestminster.
 Dr. Robert S. McKinneyTaneytown.
 Chas. J. H. GanterManchester.
 L. E. StaufferUnion Bridge.
 W. Scott Zepp.....Westminster.
 Lewis StoufferUnion Bridge.
 W. W. Ritter.....Sykesville.
 T. K. ShawWestminster.

CECIL COUNTY.

H. C. WellsElkton.
 H. R. Cameron.....Port Deposit.
 E. T. Reynolds.....Rising Sun.
 Dr. D. M. Ragan.....Conowingo.

CHARLES COUNTY.

W. S. Latus.....Wicomico.
 Henry G. Robertson.....La Plata.
 Wm. L. Hicks.....Waldorf.
 Andrew L. McDanielsPomonkey.

DORCHESTER COUNTY.

Dr. John Mace.....Cambridge.
 DeReeves' Pharmacy.....Cambridge.
 Dr. E. E. WolffCambridge.
 W. R. Elliott.....Vienna.

FREDERICK COUNTY.

S. Schley & Bro.....Frederick.
 Emergency HospitalFrederick.
 H. D. Barnett & Co.....Brunswick.
 Zimmerman's Drug Store.....Emmitsburg.

GARRETT COUNTY.

J. E. Harnett.....Oakland.

HARFORD COUNTY.

Dr. Chas. H. KrieteAberdeen.
 E. Dell & Co.....Aberdeen.
 E. A. ZeitlerHavre de Grace.
 Dr. H. F. Silver.....Henderson.
 Richardson's Drug Store..Belair.
 Dr. F. P. Smithson.....Forest Hill.

HOWARD COUNTY.

J. Martin.....Ellicott City.
 T. A. Gilmer.....Elkridge.

KENT COUNTY.

C. F. Stam's Drug Store.....Chestertown.

MONTGOMERY COUNTY.

Dr. Charles Farquhar.....Olney.
 Dr. William L. Lewis.....Kensington.
 Dr. W. T. Pratt.....Potomac.

PRINCE GEORGE'S COUNTY.

Dr. M. D. Humes.....Upper Marlboro.
 Alfred H. Wells.....Hyattsville.

QUEEN ANNE'S COUNTY.

Foreman Drug Company.....Centreville.
 Walter Wallis.....Crumpton.
 Dr. W. G. Coppage.....Church Hill.
 Dr. Foster Sudler.....Sudlersville.
 Dr. C. Percy Kemp.....Stevensville.

SOMERSET COUNTY.

Simonson's Drug StoreCrisfield.
 Dr. Martin W. Goldsborough..Princess Anne.
 Dr. G. E. Dickinson.....Kingston.

ST. MARY'S COUNTY.

TALBOT COUNTY.

Dr. E. R. Trippe.....Easton.
 Dr. Joseph A. Ross.....Trappe.

WASHINGTON COUNTY.

D. C. Auginbaugh's Pharmacy.....Hagerstown.
 J. A. West.....Hancock.
 Schindel's Pharmacy.....Hagerstown.
 Wareham's Pharmacy.Hagerstown.
 John E. AndersonClear Spring.
 Charles DownsWilliamsport.

WICOMICO COUNTY.

C. R. Truitt's Drug Store.....Salisbury.

WORCESTER COUNTY.

Lloyd, Blaine & CoPocomoke City.
 Dirickson's Pharmacy Berlin.

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